# COURSE DESCRIPTIONS

Suffix—The last letter denotes the purpose of the course.

A = Transfer

E = Recommended for Transfer

C = Career and Technical

H = Developmental

# IOWA'S COMMON COURSE DESIGNATIONS

| | |
|---|---|
| Accounting | **ACC** |
| Administrative Assistant | **ADM** |
| Associate Degree Nursing | **ADN** |
| Agriculture—Agronomy | **AGA** |
| Agriculture—Farm Mgt-Business | **AGB** |
| Agriculture—Comprehensive-Miscellaneous | **AGC** |
| Agriculture—Horticulture | **AGH** |
| Agriculture—Mechanics | **AGM** |
| Agriculture—Precision Ag | **AGP** |
| Agriculture—Animal Science | **AGS** |
| Agriculture—Technology | **AGT** |
| Anthropology | **ANT** |
| Art | **ART** |
| Automation Technology and Robotics | **ATR** |
| Automotive Technology | **AUT** |
| Business Computer Apps | **BCA** |
| Biology | **BIO** |
| Business | **BUS** |
| Computer Aided Drafting | **CAD** |
| Computer Forensics | **CFR** |
| Chemistry | **CHM** |
| Computer Programming | **CIS** |
| Cultural Studies | **CLS** |
| Communication | **COM** |
| Construction | **CON** |
| Criminal Justice | **CRJ** |
| Computer Science | **CSC** |
| Film and Theatre | **DRA** |
| Diesel | **DSL** |
| Disability Services | **DSV** |
| Early Childhood Education | **ECE** |
| Economics | **ECN** |
| Education | **EDU** |
| Engineering | **EGR** |
| Engineering Technology | **EGT** |
| Electrical Technology | **ELE** |
| Electronics | **ELT** |
| Emergency Medical Services | **EMS** |
| English Composition | **ENG** |
| Environmental Science | **ENV** |
| Finance | **FIN** |
| Foreign Language—Chinese | **FLC** |
| Foreign Language—French | **FLF** |
| Foreign Language—German | **FLG** |
| Foreign Language—Spanish | **FLS** |
| Foreign Language—Hebrew | **FLW** |
| Geography | **GEO** |
| Global Studies | **GLS** |
| Graphic Communications | **GRA** |
| Graphic Technologies | **GRT** |
| Hospitality, Culinary Arts, and Management | **HCM** |
| Heavy Equipment | **HEQ** |
| History | **HIS** |
| Health Information Technology | **HIT** |
| Health Sciences | **HSC** |
| Health Safety and Environment Tech | **HSE** |
| Human Services | **HSV** |
| Humanities | **HUM** |
| Industrial Technology | **IND** |
| Journalism | **JOU** |
| Legal | **LGL** |
| Literature | **LIT** |
| Medical Assistant | **MAP** |
| Mathematics | **MAT** |
| Manufacturing | **MFG** |
| Management | **MGT** |
| Marketing | **MKT** |
| Medical Lab Technology | **MLT** |
| Mass Media Studies | **MMS** |
| Applied Music | **MUA** |
| General Music | **MUS** |
| Computer Networking | **NET** |
| Physical Education | **PEC** |
| General Physical Education and Health | **PEH** |
| Philosophy | **PHI** |
| Pharmacy Technician | **PHR** |
| Physical Science | **PHS** |
| Physics | **PHY** |
| Practical Nursing | **PNN** |
| Political Science | **POL** |
| Paralegal | **PRL** |
| Psychology | **PSY** |
| Powerline | **PWL** |
| Radiologic Technology | **RAD** |
| Religion | **REL** |
| Science | **SCI** |
| Student Development | **SDV** |
| Sustainable Energy Resources | **SER** |
| Sociology | **SOC** |
| Speech | **SPC** |
| Workplace Based Learning | **WBL** |
| Web Development | **WDV** |
| Welding | **WEL** |

# COURSE DESCRIPTIONS

## ACCOUNTING

**ACC111-A Intro to Accounting 3**
This course is designed to teach the key concepts and skills required to record a variety of accounting entries for both a service and merchandising business, to prepare financial statements, to record payroll entries, to prepare payroll records, and to utilize good cash management skills. The skills learned will prepare students for direct job entry as small business owners and entrepreneurs. Accounting concepts are applied to a variety of companies.

**ACC121-A Principles of Accounting I 3**
An introduction to accounting terminology and concepts, and accepted accounting practices of analyzing, recording, summarizing, presenting, and interpreting business financial transactions of sole proprietorships and partnerships. Significant emphasis is placed upon practice and application.

**ACC131-A Principles of Accounting I 4**
In this, the first of two courses in principles of accounting, you will learn basic theory and structure of accounting. Emphasis will be on accounting cycles and preparations of accounting statements for service and mercantile businesses, systems and controls, partnerships and corporations.

**ACC132-A Principles of Accounting II 4**
In this course you will learn the fundamentals of financial statement analysis, long term liabilities, investments, managerial accounting for decision making, and accounting for manufacturing firms. Prerequisite: ACC131-A

**ACC142-A Financial Accounting 3**
An introduction to the use of accounting in the decision making process. Information will be presented with a bias toward user orientation as opposed to preparer orientation. Course competencies will be developed in the areas of identifying the role of accounting in society, basic accounting and business terminology, concepts behind financial information, accepted accounting practices, analysis and interpretation of financial statements of sole proprietorships and corporations.

**ACC146-A Managerial Accounting 3**
Managerial Accounting is a continuation of Financial Accounting. This course emphasizes financial statement analysis, including the reporting of cash flows, and managerial accounting as it relates to decision-making and to the manufacturing environment. This course serves as a foundation for other accounting courses for students planning careers in accounting, as well as providing for the needs for students in business administration.

**ACC161-E Payroll Accounting 3**
Completion of this course will enable you to identify the various laws that affect employers in their payroll operations, know the record-keeping requirements of these laws, realize the importance of these laws, and identify the procedures employed in a typical payroll accounting system. You will also prepare manual and computer generated payrolls. Corequisite: ACC131-A

**ACC191-E Financial Analysis 3**
This course covers the analysis of accounting data used by management in the decision making process. Data will be extracted and relationships analyzed from the main financial statements including the income statement, statement of owner's equity, balance sheet, and statement of cash flows.

**ACC221-A Cost Accounting 3**
You will learn to account for the distribution of materials, labor and overhead costs under job order, process, standard cost systems, and activity based systems. You will relate the principles and methods of applying manufacturing costs and expenses to the formation of reports for management. Prerequisite: ACC132-A

**ACC231-A Intermediate Accounting I 4**
This course will provide you with increased emphasis on the fundamental theories of financial accounting and reporting. Special emphasis will be given to balance sheet accounts. Prerequisite: ACC132-A

**ACC232-A Intermediate Accounting II 4**
In this course you will study long-term investments, current and contingent liabilities, long-term liabilities, leases, pensions, owners' equity, financial reporting, and statement analysis. Prerequisite: ACC231-A

**ACC237-A Intermediate Accounting I 4**
An in-depth study of selected financial accounting theory and practices. Topics may include professional organizations, structures, financial statements, the time-value of money, inventories, and other current and non-current assets and liabilities. As time permits some other specialty topics will be looked at such as the statement of cash flows, accounting for leases, and revenue recognition.

**ACC261-A Income Tax Accounting 3**
This course introduces the general theory and procedure pertaining to federal taxation. Applications of Federal laws as they pertain to (1) income of individual partnerships, joint ventures, estates, trusts, and corporations (2) gifts (3) estates and (4) social security are studied.

**ACC265-A Income Tax Accounting 4**
You will learn the basic information needed to prepare income tax returns for individuals. You will also be introduced to and prepare income tax returns for partnerships and corporations. Prerequisite: ACC132-A

**ACC311-A Computer Accounting 3**
This course introduces computerized accounting methods. Through hands-on computer work, the student will become familiar with the procedures necessary to complete tasks involving the general ledger, accounts payable, accounts receivable, bank reconciliation, budgeting, purchase order processing and inventory, sales order processing and inventory, fixed assets and payroll within a software application package. Learners practice setting up service and merchandising businesses and convert a manual accounting system to an electronic one. Prerequisite: ACC131-A

**ACC360-E Accounting Spreadsheets 2**
This course provides the student with an in depth working knowledge of how to use an integrated spreadsheet program to assist in routine jobs. Writing formulas is emphasized along with planning and creating spreadsheets.

## ADMINISTRATIVE ASSISTANT

**ADM105-C Intro to Keyboarding 1**
This course emphasizes keyboard mastery. It was designed to develop accuracy, speed, and control of the keyboard. Through completion of the lessons, students advance toward a minimum competency level of 30 gross words a minute (GWAM) on a 3-minute official timing with a maximum of 3 errors. The alphabetic keys are reviewed three times.

**ADM111-C Keyboarding 4**
This course emphasizes skill building for the development of speed and accuracy along with formatting and production skills involving business letters, memos, tables, reports, and other business documents.

**ADM122-A Document Formatting 3**
This course is designed for the student with minimal keyboarding experience. The major objectives are to develop touch control of the keyboard with speed and accuracy through proper keyboarding techniques and to learn proper formatting of letters, simple tables, short reports, and memorandums.

**ADM159-C Proofreading and Editing 3**
This course focuses on the applications designed to sharpen students' skills in detecting and correcting errors in written communications including memos, letters, reports, databases, presentation slides, advertisements, and/or spreadsheets. Proper English grammar, spelling, capitalization, word usage, and punctuation principles are addressed. Students will learn techniques in using business reference tools and language skills within the context of a business environment. This course also introduces the student to proofreading and editing skills necessary to prepare professional correspondence when using current and new technology (i.e. e-mail messages and voice recognition). Prerequisite: BCA216-E or equivalent.

**ADM166-C Office Procedures I 3**
This course provides preparation for employment in today's rapidly changing office environment by exposing a variety of topics including the working environment, oral and written communication, and administrative support services. This course provides an in-depth knowledge of professional office practices and protocols, comprehensive coverage and integration of business skills with current issues and trends, and the development of critical-thinking and problem-solving skills. An understanding of the roles of administrative support personnel, office health and safety issues, organization and time management, computer technology, human relations, and information and communications systems are included. This course will also emphasize meeting, conference, and travel planning, office equipment and technology records and financial management career advancement strategies for the administrative professional and effective leadership characteristics.

**ADM167-C Office Procedures II 3**
Designed as a continuation of Office Procedures I, this course will enhance the theoretical understanding of the concepts presented. Integrating academic work and technical skills with community service, students will learn to apply knowledge gained in the classroom to a "real life" setting through hands-on experience. Students will be engaged in ongoing service learning through volunteer partnerships with community agencies as an integral part of the course. With a focus on preparing students for all levels of the office environment, this course will underscore the knowledge, career skills, characteristics, and qualifications necessary for success and professionalism in the workplace. An emphasis on interpersonal skills will help students develop expertise in the areas of communication, critical thinking, value clarification, self-management, collaboration/teamwork, and human relations. Classroom project simulations throughout this course will reinforce customer service techniques, proper office etiquette, job shadow observation, scheduling responsibilities, event planning, and organization systems. Professional network strategies that will assist the student in exploring, obtaining, and maintaining employment are also included. Students will learn to develop and directly apply the fundamentals of the job search process including interviewing skills and preparation of employment documents and relevant correspondence. An individual capstone portfolio will be created including a resume, cover letter, and professional references. Prerequisites: ADM166-C, BCA216-E; Recommended Corequisite: BCA217-E

**ADM179-A Records Management 3**
Records Management course is designed to provide instruction and practice in indexing, coding, and cross-referencing records using alphabetic indexing rules. Emphasis will be placed on alphabetic systems, subject, geographic, and numeric filing. Students will review records retention and transfer, control of requisitions and charge-outs, and selection of supplies and equipment. Students are introduced to using a computer database to apply records management principles. Electronic records, image records, and establishing a records and information management program are also discussed.

**ADM180-C Administrative Management 3**
This course acquaints students with the broad areas of administrative office management, including the managerial process. It emphasizes application of learned concepts through problem-solving techniques, and includes several specialized areas of study which are generally relegated to office managers.

**ADM188-C Project and Event Management 3**
Using a project-based approach, this course is designed for business, management/marketing majors, entrepreneurs, administrative staff, and those that are organized, resourceful, and enjoy multitasking. Project management, business/event promotion, and critical thinking skills will be developed. Use technology to coordinate essential activities including travel and event logistics, budgeting, video conferencing, scheduling, and the creation of promotional materials.

**ADM191-E Virtual Office Management I 3**
This course introduces the virtual office environment including the roles and responsibilities of the virtual office manager. The course will focus on office procedures, virtual meeting management, mobile communications and time management.

**ADM192-E Virtual Office Management II 3**
This is the second course in a sequence of courses and focuses primarily on the production, management, storage and accessibility of documents. In addition students will be introduced to security and confidentiality in the virtual office. Prerequisite: Virtual Office Management I

**ADM193-E Virtual Office Management III 3**
This course introduces students to the production of forms and production of ADA compliant PDF documents, the use of web and social media, and setting up a virtual office. Prerequisites: Virtual Office Management I and Virtual Office Management II

**ADM900-C Internship I 3**
Internship I is an optional course designed for summer term completion between years 1 and 2. This course provides an opportunity for students to gain practical and professional work experience through on-site training in an approved office setting. The actual training on the job site will be under the supervision of a designated person in the sponsoring organization/business. Internship hours are scheduled on an arranged basis. The total internship requirement is 200 hours of on-the-job supervised experience. This course is repeatable for a maximum of 6 credits. Students may or may not be paid wages during the internship. * Prerequisites: The student must have taken/or be taking all courses required for the successful completion of the Administrative Office Assistant Diploma program and have a minimum grade point average of 2.5. All internships must be approved by the Administrative Office Assistant Instructor (or designee).

**ADM932-A Internship II 3**
This optional course is a continuation of Internship I. Internship II provides an opportunity for additional cooperative work experience in a job setting related to the student's field of study and career interest. The on-site practicum arrangement is identical to Internship I however, the total internship requirement is 400 hours of on-the-job supervised experience. Prerequisite: ADM900-C

**ADM946-C Seminar 3**
Maintaining a focus on preparing students for all levels of the office environment, this course examines the emerging trends and technological changes in Administrative Office Management. It is designed to develop the knowledge and skills necessary for success and professionalism in the workplace. An emphasis on interpersonal skills will help students develop expertise in the areas of communication, critical-thinking, value clarification, self-management, teamwork, and human relations. Prerequisite: ADM167-C

# ASSOCIATE DEGREE NURSING

**ADN648-C Advanced Nursing Concepts I 2**
The course is designed to assist students in establishing a knowledge base in the basic science of drugs and to demonstrate how that knowledge can be directly applied in providing client care and client education. Pharmacological principles will include reviewing physiology and pathophysiology, discussing basic properties of drug families, focusing on the essentials of drug administration such as indications, contraindications, adverse effects, and drug interactions and demonstrating the application of pharmacology into nursing practice. QSEN (Quality Safety Education for Nurses) will be introduced to the student. The knowledge, skills, and attitudes (KSA's) addressing the concepts of client centered care, teamwork, and collaboration, evidence based practice, quality improvement, safety, and informatics will be a focus of the course.

**ADN649-C Advanced Nursing Concepts II 2**
This course is designed to assist students in becoming leaders and managers in the nursing profession. Students will focus on the professional roles of the nurse as manager of care and member of the discipline of nursing. The focus will be on leading and managing care across the health care continuum realizing that leadership and management reflects the dynamic state of nursing practice and health care. A systematic approach using the knowledge, skills, and attitudes of caring for the pediatric and adult client are explored through a preceptor and capstone simulation experience. Prerequisites: ADN656-C, ADN648-C

**ADN650-C Transition to A D N 3**
This course is a combination of theory and lab. The course provides an overview of the NCC nursing program and the transitional role of LPN to RN. The concepts of delegation, prioritization and ethical and legal issues in nursing will be an essential part of this course. The course will focus on assessment of the medical/surgical client and care of lines, drains, and tubes. A focus on intravenous therapy including peripheral, central lines, TPN, lipids, and blood administration will be included. An orientation to clinical facilities will be provided. Computer documentation training for these facilities will be offered. Prerequisite: Completion of NCC's PN/EPN program or accepted as advanced standing student (graduate of approved practical nursing program and/or working as an LPN).

**ADN655-C ADN Nursing IA 6**
This course is a combination of theory, lab, and clinical. Health, illness, and healthcare environment are examined as they relate to the care of patients with variable needs. The focus is on application of theories, concepts, research, issues, and trends in caring for selected patients throughout the lifespan. Emphasis is on the role of the RN and the development of skills to think critically and implement sound reasoning skills. Special topics of this course will include fluid and electrolytes and acid/base imbalances. Utilizing the knowledge, skills, and attitudes necessary to care for pediatric and adult patients with urinary/renal and immune/infectious disorders will be addressed. Students will care for patients with variable needs in acute care and simulation settings. Prerequisite: ADN650-C

**ADN656-C ADN Nursing IB 6**
This course is a combination of theory, lab, and clinical. Health, illness, and healthcare environment are examined as they relate to the care of patients with variable needs. The focus is on application of theories, concepts, research, evidence based practice and issues and trends in caring for selected patients throughout the lifespan. Emphasis is on the role of the professional nurse and on the development of knowledge, skills, and attitudes necessary to think critically and implement sound reasoning skills when caring for patients. The topics of this course will include care of the pediatric and adult client with cardiovascular disorders and respiratory disorders. The student will care for clients with variable needs in acute care and simulation settings. Prerequisite: ADN655-C

**ADN657-C ADN Nursing IIA 6**
This course is a combination of lecture, lab, and clinical. The course provides an opportunity for synthesis and evaluation of professional nursing role behaviors essential to care of patients experiencing complex needs in a variety of settings. Emphasis is placed on refinement of critical thinking and communication skills and the integration of a range of therapeutic interventions into nursing practice. Utilizing the knowledge, skills, and attitudes necessary to care for the normal and complicated obstetric and newborn patient, the adult and pediatric patient with endocrine and acute and chronic neurological disorders will be addressed. A special topic in this course will be shock and trauma. The student will care for clients in the psychiatric and obstetric clinical setting. Prerequisites: ADN656-C, ADN648-C

**ADN658-C ADN Nursing IIB 6**
This course provides an opportunity for synthesis and evaluation of professional nursing role behaviors essential to care for patients experiencing complex care needs in a variety of settings. Emphasis is placed on refinement of critical thinking skills and communication skills and the integration of a range of therapeutic interventions into nursing practice. Utilizing the knowledge, skills, and attitudes to safely care for the pediatric and adult patient with gastrointestinal disorders, psychiatric disorders, musculoskeletal disorders, and cancer will be addressed. Prerequisite: ADN657-C

**ADN700-C ADN Nursing IA 5**
This course is a combination of theory and lab. Health, illness, and healthcare environment are examined as they relate to the care of clients with variable needs. The focus is on application of theories, concepts, research, evidence based practice, issues, and trends in caring for selected clients throughout the lifespan. Emphasis is on the role of the RN and the development of skills to think critically and implement sound reasoning skills. Special topics of this course will include fluid and electrolytes and acid/base imbalances. Utilizing the knowledge, skills, and attitudes necessary to care for pediatric and adult clients with urinary/renal and immune/infectious disorders will be addressed. Prerequisite: ADN650-C; Corequisite: ADN701-C

**ADN701-C ADN Nursing IA: Clinical 1**
This course provides the Associate Degree nursing student with the clinical opportunity to practice in the role of a Registered Nurse and demonstrate further proficiency in the care of the pediatric and adult clients with variable needs in acute care and simulation settings. Prerequisite: ADN650-C; Corequisite: ADN700-C

**ADN702-C ADN Nursing IB 5**
This course is a combination of theory and lab. Health, illness, and healthcare environment are examined as they relate to the care of clients with variable needs. The focus is on application of theories, concepts, research, evidence based practice, issues and trends in caring for selected clients throughout the lifespan. Emphasis is on the role of the professional nurse and on the development of knowledge, skills, and attitudes necessary to think critically and implement sound reasoning skills when caring for clients. The topics of this course will include care of the pediatric and adult client with cardiovascular disorders and respiratory disorders. Prerequisites: ADN700-C, ADN701-C; Corequisite: ADN703-C

**ADN703-C ADN Nursing IB-Clinical 1**
This course provides the Associate Degree nursing student with the clinical opportunity to practice in the role of a Registered Nurse and demonstrate further proficiency in the care of the pediatric and adult clients with variable needs in acute care and simulation settings. Prerequisites: ADN700-C, ADN701-C; Corequisite: ADN702-C

**ADN704-C ADN Nursing IIA 5**
This course is a combination of lecture and lab. The course provides an opportunity for synthesis and evaluation of professional nursing role behaviors essential to care of clients experiencing complex needs in a variety of settings. Emphasis is placed on refinement of critical thinking and communication skills and the integration of a range of therapeutic interventions into nursing practice. Utilizing the knowledge, skills, and attitudes necessary to care for the normal and complicated obstetric and newborn client, the adult and pediatric client with endocrine and acute and chronic neurologic disorders will be addressed. A special topic in this course will be shock and trauma. Prerequisites: ADN702-C, ADN703-C; Corequisite: ADN705-C

**ADN705-C ADN Nursing IIA-Clinical 1**
This course provides the student with the opportunity to care for clients throughout the lifespan. These experiences allow the student to gain knowledge of community resources and to enhance the student's understanding of the role of the professional nurse in the psychiatric and obstetric settings. A systematic approach using the knowledge, skills, and attitudes will be utilized to safely care for clients in the psychiatric and obstetric clinical and simulation settings. Prerequisites: ADN702-C, ADN703-C; Corequisite: ADN704-C

**ADN706-C ADN Nursing IIB 5**
This course provides an opportunity for synthesis and evaluation of professional nursing role behaviors essential to care for clients experiencing complex care needs in a variety of settings. Emphasis is placed on refinement of critical thinking skills and communication skills and the integration of a range of therapeutic interventions into nursing practice. Utilizing the knowledge, skills, and attitudes to safely care for the pediatric and adult client with gastrointestinal disorders, psychiatric disorders, musculoskeletal disorders, and cancer will be addressed. Prerequisites: ADN704-C, ADN705-C; Corequisite: ADN707-C

**ADN707-C ADN Nursing IIB-Preceptor 2**
This course provides the student with the opportunity to care for clients throughout the lifespan. These experiences allow the student to gain knowledge of community resources and to enhance the student's understanding of the role of the professional nurse with limited experience with a leadership role. A systematic approach using the knowledge, skills, and attitudes of caring for the pediatric and adult client are explored through a preceptor and capstone simulation experience. Prerequisites: ADN704-C, ADN705-C; Corequisite: ADN706-C

**ADN708-C Advanced Nursing Concepts II 1**
This course is designed to assist students in becoming leaders and managers in the nursing profession. Students will focus on the professional roles of the nurse as manager of care and member of the discipline of nursing. The focus will be on leading and managing care across the health care continuum realizing that leadership and management reflects the dynamic state of nursing practice and health care. Prerequisites: ADN702-C, ADN703-C

# AGRICULTURE

**AGA114-A Principles of Agronomy 3**
A lecture/laboratory class that serves as a base for several subsequent courses. Crop growth and development along with soil management principles are emphasized. Additional topics include diseases, insects, weeds, weather, tillage, harvesting and grain storage and handling. An interactive computer based system serves as a basis for the laboratory portion of the course.

**AGA154-A Fundamentals of Soil Science 3**
This course covers soil properties affected by their formation due to climate vegetative cover, parent material, drainage and topography.

**AGA158-A Soil Fertility 3**
This course explains the phenomena involved in making and keeping a soil in its most economical, productive state. Students learn why soils must be managed differently due to differences in origin and make up.

**AGA182-A Introduction to Soil Science 3**
This course will help students understand soil function, texture, structure, formation, taxonomy, and other properties of soil.

**AGB210-E Ag Law 2**
This course is designed to make the student aware of the legalities of the farm business in regard to estate planning, leasing, contracts and legal liability.

**AGB235-A Introduction to Agriculture Markets 3**
Introduction to Agriculture Markets is an overview of the structure, economics, organization, and function of the world food marketing system. Topics in past, present and future domestic and worldwide market issues are discussed. The course examines how the marketing system is influenced by governmental and private policy and the effects those policies have on producers, commodity handlers, processors, middlemen, and consumers. Basic marketing and merchandising strategies are also covered.

**AGB330-A Farm Business Management 3**
A study of the use of principles of farm management in developing a farm or farm business operation. Laboratory work will be used to increase the understanding of key concepts.

**AGB336-A Agriculture Selling 3**
Principles of selling applied to agricultural settings. Examination of agricultural consumers' buying habits and the development of sales strategies to meet these consumers' needs and wants serves as a foundation of this course. Two main activities dominate this course. Students spend a day shadowing an agricultural sales professional to observe and report on specific practices. In a final activity, Ready-Set-Sell, students prepare and deliver a sales presentation to an agricultural sales professional. Prerequisite: ECN130-A

**AGB437-A Commodity Marketing 3**
Commodity Marketing examines basic, fundamental and technical price analysis, commodity futures, futures options, alternative cash contracts, sources and uses of marketing information, and relevant agricultural marketing strategies.

**AGB466-A Agricultural Finance 3**
This course is a study of the terminology and tools of agricultural finance. It emphasizes the preparation of financial statements, cash flows, budgets and bookkeeping principles. It also discusses financial risk strategies and credit costs.

**AGB470-A Farm Records Accounts & Analysis 3**
Emphasis is placed on the importance of records as an essential management tool for farm management.

**AGC403-A Sustainable Agriculture 2**
This course provides students the necessary information and knowledge to successfully convert their farming operation from conventional to organic farming, including transitioning farming methods that enhance their future organic farm productivity. The knowledge student's gain in this class will enable them to make a smooth transition to organic farming, gain certification, and remain certified.

**AGC420-A Issues in Agriculture 3**
This course provides the students the opportunity to collect, discuss, interpret, and defend current issues that affect the economic, environmental, and social conditions and production of agricultural commodities.

**AGH284-E Pesticide Application Certification 3**
Identification and biology of common insect, disease, and weed pests of turf grass and ornamentals is covered in this course. This course reviews materials and testing procedures required to become a certified commercial pesticide applicator.

**AGM155-A Farm Equipment Management 2**
Students will utilize the operator's manual to find information concerning operation, lubrication and adjustment sections. In addition, students will properly adjust and operate the following equipment: 1) row crop cultivator 2) square baler 3) disk/harrow 4) field cultivator. Course will also address safe handling procedures and the use of herbicides, calibration of the field sprayer for proper operation and adjusting the grain drill to plant soybeans and small seeds.

**AGP329-A Introduction to GPS 3**
An introduction to the use of GPS and VRT as it impacts agricultural producers. Students will use field mapping software and/or GPS systems as part of the class.

**AGS113-A Survey of the Animal Industry 3**
This lecture and lab course introduces the student to a broad spectrum of animal science. Beef, swine, sheep, dairy, horse and poultry production are presented. Some exotic and nontraditional livestock are discussed.

**AGS226-A Beef Cattle Science 3**
A course dealing with the retail beef industry, management decisions of the cow-calf and yearling-stocker producers, major health problems and their prevention and treatment, ruminant nutrition balance rations and forage resource management.

**AGS242-A Animal Health 3**
This course provides information about the cause, nature, prevention, and treatment of the common health problems of farm animals. This course also identifies animal behavior and develops a herd health program.

**AGS270-A Foods of Animal Origin 3**
A general basic agri-food science course that deals with world food needs and available food supplies, types of food and nutritive value and use, and methods used and challenges involved in food production, transportation, preservation/processing, storage, distribution, marketing and consumption. The course covers both animal origin and non-animal origin food products.

**AGS319-A Animal Nutrition 3**
Nutritional principles, digestive systems, composition and nutritional characteristics of common feedstuffs, ration formulation and recommended feeding programs for farm animals. Prerequisites: AGS113-E, CHM112-A or permission of instructor.

**AGT250-A Foods & Biosecurity Issues 3**
This course focuses on threats to food system biosecurity. Students will research and discuss contemporary issues regarding biosecurity, vulnerabilities of the food system from pre-harvest through post-processing, consumption, and potential threats by class of agents.

## ANTHROPOLOGY

**ANT105-A Cultural Anthropology 3**
This course covers the development of culture and origins of man concepts and techniques for understanding world culture (similarities, differences, and diffusion) and systems of belief and action by which different people live.

## ART

**ART101-A Art Appreciation 3**
This course in the visual arts is designed to give you an understanding and awareness of art in relationship to your environment.

**ART106-A Art Appreciation Studio 3**
This studio-based course explores the vocabulary and media of art through a problem-solving structure. Students will utilize a variety of two- and three-dimensional media to investigate the elements and principles of design and the creative process.

**ART117-A Computer Graphic Design 3**
Computer Graphic Design is a studio-oriented course designed to use the computer as a tool for graphics production. Typography, page layout, fine art, graphic design and digital images are among the topics discussed in class.

**ART120-A 2-D Design 3**
This foundational studio course addresses visual dynamics on the two-dimensional picture plane. Through the design process students explore visual elements and principles of organization. Projects cover technical skills, idea generation, and development, and presentation.

**ART124-A Computer Art 3**
Computer Art is a studio-oriented course designed to use the computer as a tool for the production of studio quality two dimensional imagery. Technology in the arts is a relatively new outlet for many artists, this course aims to experiment with a variety of software and peripherals to generate personally authentic works of art.

**ART133-A Drawing 3**
Drawing is a foundation course dealing with the practices and applications of basic drawing principles and techniques. Study research of the various media and compositional aspects is included.

**ART143-A Painting 3**
This course is designed to provide familiarity with the basic materials, tools, and techniques of painting. You will work with the elements of pictorial organization and expression. (Painting supplies required.)

**ART144-A Painting II 3**
A combined lecture and lab course. A continuation of ART143-A, further exploring the principles, techniques, media and creative potentials of painting. Prerequisite: ART143-A

**ART163-A Sculpture 3**
The student will develop an understanding and appreciation of the interaction of form in space through the manipulation of materials and the experience of process. The student will investigate sources, develop the ability to conceptualize and apply sculptural design principles to create solutions to assigned problems.

**ART173-A Ceramics 3**
This course will explore the properties of clay. Students will do projects using the potters wheel slab and coil hand construction and sculpture. A glazing and firing project will be included in this study.

**ART186-A Digital Photography 3**
Digital Photography introduces students to the use, control and manipulation of Photoshop Elements, digital cameras and scanned images. Tutorials and individual creative assignments introduce students to the foundation of digital imagery.

**ART203-A Art History I 3**
This course is a survey of art history from prehistory to the Renaissance. Both period style and personal styles will be compared to the lifestyles of the period. Emphasis will be on artists and art forms of western cultures.

**ART204-A Art History II 3**
This course is a survey of the visual arts from the Renaissance to the present time with an emphasis on the relationship between art and social, economic, religious and technological development. It stresses the historical context of contemporary forms of expression and examines human concerns as they are revealed in art.

## AUTOMATION TECHNOLOGY & ROBOTICS

**ATR100-C Intro to Robotics 2**
Students will be introduced to the theory and uses of robots in industry today, including different types of programming. Students will become familiar with the end effect tooling and their different uses per application.

**ATR102-C Introduction to Robotics 3**
Introduction to Robotics is an introduction to the start-up, operation and simple programming of industrial robots. Topics include robot safety, robot types, robot move types, program structure, motion control, decision making, peripheral control, robot control modes and program examples.

## AUTOMOTIVE TECHNOLOGY

**AUT106-C Introduction to Automotive Technology 2**
This course is designed to get students ready for their career in the transportation industry. During this course students will learn about lab safety as it pertains to this career. This course teaches safe practices in working with hazardous materials, power tools, hand tools, chemicals and hoists. It will also teach location specific practices dealing with used oil disposal and containment materials. The introduction course is where students will become competent in light duty maintenance and repair service procedures, computer programs, parts room policies. Students will become familiar with industry software that will be utilized for service information, online assignments, testing, and grading.

**AUT139-C Basic Welding Theory & Applications 1**
This course is designed to introduce students to the basic fundamentals of welding. Procedures used in Shielded Metal-Arc Welding and Gas Metal-Arc Welding are emphasized. Oxyacetylene cutting and welding are also covered.

**AUT165-E Automotive Engine Repair 5**
This course introduces internal combustion engine fundamentals. Covers engine operation, servicing, diagnosis and overhaul. Teaches engine disassembly, making precision measurements and engine reassembly. Emphasizes theories in practical, hands-on applications in classroom and lab exercises. Prerequisite: AUT605

**AUT251-E Automotive Drive Trains I 6**
Emphasis is placed on the theory and practical application of diagnosing and repairing of automotive drive train components to include differentials, transfer case, manual transmissions, drive shafts and clutch systems. Study also includes automotive transmissions of late model front wheel drive vehicles. Prerequisite: AUT605

**AUT252-E Automotive Drive Trains II 6**
This course covers the theory and practical application of diagnosing and repairing and of automatic transmissions and computer controls with emphasis on late model front and rear wheel drive vehicles. Prerequisite: AUT251

**AUT404-E Auto Suspension & Steering 4**
This course is a combined lecture and lab course that studies the operation and service of today's suspension systems. It covers suspension service and alignment techniques and includes training on a-frame and McPherson suspension repair, rack and pinion steering, front and rear alignment, four-wheel alignment, electronic alignment systems, wheel balancing and electronic leveling control systems. Prerequisite: AUT605

**AUT503-E Automotive Brake Systems 3**
The course covers the latest procedures of inspecting, measuring, diagnosing, and the repairing of drum and disc brakes. Classroom and lab instruction will be utilized to teach students the latest procedure for inspecting, measuring, diagnosing and repair. Prerequisite: AUT605

**AUT605-E Basic Automotive Electrical Systems 7**
This is a course of theory and application of the fundamentals of basic automotive electricity, batteries, starting and charging systems and an introduction to the accessories. Prerequisite: AUT106

**AUT703-E Auto Heating/Air Conditioning 3**
This is a combined lecture and lab course that covers the theory, operation and service of automotive heating and air conditioning systems. It presents component repair, charging and leak service and emphasizes the diagnosis of electronic climate control systems and safe recovery of refrigerant compounds. Prerequisite: AUT605

**AUT805-E Automotive Engine Performance I 6**
An automotive engine must have the correct air, fuel, and ignition to perform properly. This course will provide the knowledge and experience to restore gas and light duty diesel engine performance to a level expected by the vehicle manufacturer and owner. You will inspect, diagnose, adjust, repair or replace components of the ignition, fuel, and emission systems as well as determine engine condition. Prerequisite: AUT605

**AUT813-E Automotive Engine Performance II 6**
This course emphasizes advanced electronic engine performance diagnostic practices. Technical knowledge and hands-on application are utilized to restore engine performance on today's complex and rapidly changing technology. Prerequisite: AUT805

**AUT846-E Automotive Electronics 6**
Electrical fundamentals are applied to computer networking in today's complex vehicle electronic systems. Technical knowledge and skills necessary for proper diagnosis, service, and repair of a vehicle's electronic controls and accessories are stressed. These systems include safety controls, instrumentation, steering, suspension, vehicle comfort systems and hybrids. Prerequisite: AUT605

**AUT867-E Intro to Light Duty Diesel 3**
This course provides knowledge of the basic design and operations for light duty diesel platforms in the automotive field. Topics include familiarization with light duty diesel, safety precautions, also service and maintenance procedures. Students will learn to perform basic maintenance and service operations and demonstrate proper safety.

**AUT868-E Diesel Syst Diagnosis & Repair 7**
This course includes the fundamentals of electronic engine management on light duty diesel platforms. Topics covered will be high voltage injection systems, OBDII fault detection, air, fuel and exhaust systems. Students will learn to utilize diagnostic resources and equipment, identify and troubleshoot electronic malfunctions and complete repairs on light duty diesels. Prerequisite: AUT867

**AUT912-E Cooperative/Internship 6**
Spend one summer term (400 Hours) working as an entry-level technician in a cooperating auto service facility. Students are able to apply the principles and techniques learned during their first year. In addition, you are afforded the opportunity to experience the auto service industry from the inside as an employee. In order to participate in this course a student must have a valid driver's license and have a cumulative grade point of 2.0. Prerequisites: AUT605, AUT165, AUT503, AUT404, AUT805

## BUSINESS COMPUTER APPLICATIONS

**BCA115-E Internet Basics 1**
In addition to an overview of the development of the Internet, the course provides instruction in browsing the World Wide Web, doing research on the Internet using search engines and search directories, setting up e-mail accounts, using an e-mail client, subscribing to newsgroups, identification of file types used on the Internet, and downloading files from the internet.

**BCA120-E Computer Orientation 1**
BCA-120 An introductory course for those with little or no computer experience. The class will cover computer hardware and software concepts and things to consider when purchasing, installing, or maintaining a personal computer. This course also includes a brief overview of the Internet, operating systems, word processing, spreadsheet and database software applications

**BCA129-A Basic Word Processing 2**
This course addresses basic and intermediate levels of word processing using Microsoft Word. Skills introduced include manipulating Windows, entering and editing text, formatting paragraphs and text, using the spelling checker and thesaurus, selecting printers and printing documents, and applying document formatting options.

**BCA130-E Advanced Word Processing 2**
Advanced features of Microsoft Word. Skills introduced include using the following: sharing your work, advanced tables, styles, templates and wizards, merged documents, graphics, desktop publishing, diagrams and charts, electronic forms, templates and wizards (as time permits). Prerequisite: BCA129-A

**BCA147-E Basic Spreadsheets 2**
To aid in successfully completing this course, you must have access to the Microsoft Office suite, preferably the Office2003 version. MSOffice 98,160MSOffice 2000, MSOffice XP (2002)160 may be utilized, but you will note differences between the Office XP text explanations, diagrams and the screen options available in your version.160 Test vocabulary and questions are based on MSOffice1602003 version.

**BCA148-C Advanced Spreadsheets 2**
The student will become acquainted with additional feature of the Excel spreadsheet program. Topics include templates, macros, data validation, importing external data, pivot charts, and pivot tables.

**BCA152-A Comprehensive Spreadsheets 3**
Concepts of spreadsheets and application in the business world are covered. Introductory topics include creation of spreadsheets, data manipulation, printing, sharing, formatting, use of predefined functions and charts. Advanced topics will include creating macros, filtering, importing and exporting data, and spreadsheet analysis. Application to business situations will be emphasized. Microsoft Excel will be used for this course. Prerequisites: CSC110 Introduction to Computers or consent of the instructor

**BCA165-C Basic Databases 2**
This course teaches the fundamentals of database design and database creation. Students will learn to create databases, query databases, maintain databases using design and update features, create custom reports, forms and combo boxes and create and use a data access page that allows users to access an Access database using the Internet.

**BCA167-C Comprehensive Databases 3**
An in-depth study of database management concepts, their uses, roles, limitations, advantages, and disadvantages. Students, through hands-on experience, will learn to use database management software to design, create, set up, utilize, query, program, customize, and integrate databases. Application to business situations will be emphasized. Prerequisites: CSC110 Introduction to Computers or consent of the instructor

**BCA215-A Computer Business Applications 3**
This is a course for experienced computer users. This is an upper level applications course utilizing Microsoft Office programs. Special attention will be given to program integration and applying skills to business situations. Prerequisites: CSC110 or equivalent, or instructor approval

**BCA216-E Introduction to Microsoft Office App 4**
In this course, students will study the materials to reach the specialist-level in Microsoft Word and PowerPoint. Instruction and hands-on training is tailored to develop the performance-based skills leading to Microsoft Office Specialist (MOS) Certification. This course focuses on word and information processing, computer concepts/ techniques, interactive presentation graphics, and Microsoft Office software applications for validating electronic office expertise and productivity. Students will prepare a variety of practical business documents, create, edit, and enhance presentations and slideshows, and master advanced software functions utilizing a desktop information management system. Specialized software and training will assist students in developing proficiency in computer technology and gaining the knowledge to use Microsoft Office programs in the professional world.

**BCA217-E Advanced Microsoft Office Applications 4**
This course is a continuation of Introduction to Microsoft Office Applications. Students will complete the course materials to reach the specialist-level in Microsoft Excel and Access. Instruction and hands-on training is tailored to develop the performance-based skills leading to Microsoft Office Specialist (MOS) Certification. This course focuses on an in-depth coverage of electronic spreadsheets and relational database management software. Students will create and edit a workbook with multiple sheets and use graphic elements to represent data visually. Specialized software and training will assist students in developing a fundamental understanding of the Excel environment and spreadsheet terminology in order to complete project tasks using functions, formulas, financial analysis, data-input technologies, charting features, and templates. This course will also provide training in the concepts and techniques of database management and relationships. Using the principle features of database software for business applications, students will create, manipulate, and maintain Access database objects and format output as tables, queries, forms, and reports. Prerequisite: BCA216-E

**BCA218-E Advanced Office Applications 3**
Intermediate and Advanced software applications utilizing the Microsoft 2010 suite to create documents, worksheets, databases, and presentations suitable for course work, professional purposes, and personal use.

**BCA220-A Integrated Computer Business Application 2**
This is an advanced course in microcomputer software applications. Students will integrate spreadsheets, databases, presentations and word processing documents including creating a web site and various importing and exporting of data. Prerequisites: BCA129, BCA147 and BCA165, or CSC110

**BCA240-E Graphic Design 3**
In this course you will learn how to design promotional material for different applications. Integrating visual appeal with solid content will be a fundamental principle. You will get hands-on experience creating attractive and effective marketing communication pieces on the computer.

**BCA250-E Desktop Publishing-Publisher 3**
This course gives the student knowledge and practice in desktop publishing using Microsoft Publisher software. Desktop publishing is the integration of graphics, text, and design to create such documents as flyers, letterhead, business cards, newsletters, brochures, web pages, etc. Decision-making skills will be used to complete desktop publishing projects. Prerequisite: CSC110

**BCA265-E Project Management 3**
This course is designed to provide students exposure to project management and its importance to improving success in information technology projects. Topics addressed in the course will include project life cycle, cost estimates, value management and motivation theory,and team building. Tools and techniques important to project management will also be presented, including project selection methods, work breakdowns, network diagrams, critical path analysis and scheduling.

**BCA732-C Getting Organized With Outlook 1**
This is an introductory course to Outlook. Your experience will include creating and sending emails, email attachments, appointments and calendar items and address books.

## BIOLOGY

**BIO105-A Introductory Biology 4**
An introduction to basic biological principles with emphasis on topics and issues of current interest and applications of biology related to the medical, ethical, and social dilemmas of humans integration with the biosphere. The required laboratory will stress the process of science and exposure to living organisms. Topics to be considered are structure, function, and metabolism of cells, genetics, impact of molecular biology and genetic engineering, plants, animals, diversity, and evolution.

**BIO114-A General Biology IA 4**
This course is an introduction to basic principles of biology. Topics include basic chemistry, cellular biology, and genetics. The general course goal is to provide students with a sound foundation in selected biological topics. This foundation will permit interested students to continue further studies in related areas of biology, and to enable students to become knowledgeable consumers of science.

**BIO115-A General Biology IIA 4**
This course is a continuation of General Biology IA (BIO114). Course topics include evolution, biological diversity, plant and animal anatomy and physiology and ecology. Prerequisite: BIO-114

**BIO125-A Plant Biology 4**
Plant Biology is designed for non-science majors interested in plants and plant-like organisms. Topics include classification, plant structure and function, development, metabolism, and heredity. Laboratory exercises complement each area of study.

**BIO133-A Ecology 3**
In this course you will be introduced to ecological and environmental concepts. Emphasis will be placed on ecosystem and community structure, nutrient cycling, energy flow, evolution, and population interrelationships. The laboratory portion of the course will entail using ecological field methods to survey local plants and animals and using water and air analysis equipment. Corequisite: BIO134-A

**BIO134-A Ecology Lab 1**
This course shall accompany BIO133-A; Corequisite: BIO133-A

**BIO146-A Genetics 3**
This course is an introduction to genetics, topics included are: DNA, chromosomes, Mendelian genetics, mutations, molecular genetics, recombinant DNA, GMO's, genetic engineering, molecular genetics and disease. At least one semester of biology should be completed before taking this class. Recommended: College biology class and high school chemistry. Prerequisite: BIO105

**BIO151-A Nutrition 3**
In this course you will learn a basic overview of the principles of nutrition. Discussion focuses on the major nutrients and their significance and utilization in the human body. Additional topics discussed include food trends, nutritional needs through the lifespan, weight management, stress management, and drug-food interactions.

**BIO154-A Human Biology 3**
Human Biology is a study of biology which emphasizes the human body. Topics such as the cell, basic chemistry, human anatomy and physiology, genetics, human evolution and human ecology are included. Human Biology is designed for non-science majors or students requiring a review prior to taking Anatomy and Physiology. Corequisite: BIO155-A

**BIO155-A Human Biology Lab 1**
This course shall accompany BIO154-A; Corequisite: BIO154-A

**BIO157-A Human Biology 4**
Human Biology is designed for non-science majors or as a prerequisite for higher-level anatomy and physiology courses. It focuses on the following areas: the molecular and cellular basis of human life, the integration of humans and the biosphere, the structure and function of human tissues, organs and organ systems and the principles of genetics and human development. Laboratory exercises complement each area of study

**BIO162-A Essentials of Anatomy & Phys 3**
(Designed for health-related fields.) Prerequisites: One year of high school biology or one year of high school chemistry or CHM 112 Introduction to Chemistry or instructor approval. Introduces the student to the structure, function, and organization of the human body and all body systems (3, 0)

**BIO163-A Essentials of Anatomy and Physiology 4**
Human Anatomy and Physiology is a survey of the basic concepts of human anatomy and physiology. Emphasis is placed on the study of the structure and function of the major organ systems of the human body.

**BIO165-A Human Anatomy and Physiology I 3**
This course is an advanced study of anatomy and physiology. The relationship between body structure and function and homeostasis forms the basis for the course. Pathological processes that result in dysfunction and disease are presented. Major topics include cell biology, histology, skeletal, muscular, and nervous systems. Corequisite: BIO167-A

**BIO167-A Human Anatomy and Physiology I Lab 1**
This course shall accompany BIO165-A; Corequisite: BIO165-A

**BIO168-A Human Anatomy & Physiology I 4**
An advanced study of anatomy and physiology, the relationship between body structure and function and homeostasis forms the basis for the course. Pathological processes that result in dysfunction and disease are presented. Major topics include cell biology, histology, skin, skeletal, muscular, and nervous systems. Includes lecture and laboratory.

**BIO170-A Human Anatomy and Physiology II 3**
This course is an advanced study of anatomy and physiology. The relationship between body structure and function and homeostasis forms the basis for the course. Pathological processes that result in dysfunction and disease are presented. Major topics include digestion, endocrine, circulatory, lymphatic, respiratory, urinary, and reproductive system. Prerequisite: BIO165-A; Corequisite: BIO172-A

**BIO172-A Human Anatomy and Physiology II Lab 1**
This course shall accompany BIO170-A. Prerequisite: BIO167-A; Corequisite: BIO170-A

**BIO173-A Human Anatomy and Physiology II 4**
An advanced study of anatomy and physiology. The relationship between body structure and function and homeostasis forms the basis for the course. Pathological processes that result in dysfunction and disease are presented. Major topics include digestive, endocrine, circulatory, lymphatic, respiratory, urinary, and fluid, electrolyte, and acid-base balance. Includes lecture and laboratory.

**BIO183-A Microbiology 3**
This is a study of the concepts and facts that relate to microbiology. The fundamental characteristics of microorganisms are introduced. Major units of study are physiology of microorganisms, host-parasite relationships, and medical microbiology. Recommended Prerequisite: BIO165-A/BIO167-A or BIO168-A; Corequisite: BIO184

**BIO184-A Microbiology Lab 1**
This course shall accompany BIO183-A. Recommended Prerequisite: BIO 165-A/BIO167-A or BIO168-A; Corequisite: BIO183-A

**BIO186-A Microbiology 4**
Microbiology is an in-depth examination of the microbial world, with emphasis on classification, reproduction, genetics, physiology, infectious disease, and control. Laboratory exercises will be directed toward identification of clinically and economically important organisms. BIO168 or BIO 165/167 is recommended.

**BIO198-E Introduction to Pathology 3**
The focus of this course is the nature, cause, and treatment of disease together with the terminology pertaining to injury and disease processes. This course is designed to permit you to recognize the relationship between clinical symptoms and the disease process. Attention is also given to the understanding and interpretation of the information within a patient's medical record. Prerequisite: BIO165-A; Corequisite: BIO170-A

# BUSINESS

**BUS102-A Introduction to Business 3**
This course introduces you to American contemporary business, its nature, and environment. This survey course provides you with exposure to the following areas of business: the social responsibilities of business, management, production, human resources, marketing, finance, quantitative methods, world business, and business law.

**BUS106-A Employment Strategies 2**
This course will introduce students to the world of personal assessment, personal marketing, and job search know-how. Assignments will focus on their individual and career targets, while developing successful lifetime job search skills and career management tools. Students will learn job search techniques, such as completing employment applications, preparing letters of application, creating effective resumes, using Web 2.0 tools for personal marketing and professional networking, developing interview strategies, and preparing for the job interview.

**BUS110-C Business Math & Calculators 3**
This course is a study of the mathematics of business in its application to a variety of vocations including fundamental mathematical processes, fractions, price and cost, interest, bank discounts, cash and trade discounts, depreciation, payroll and taxes, and financial statements. Students will acquire the skills to use Microsoft Excel to perform each concept as well as using the traditional methods.

**BUS111-C Business Math 2**
This course emphasizes basic business terminology and business math applications. Topics such as discounts, payroll, markup and markdowns, taxes, interest, credit, depreciation, inventory, investments, insurance, and financial statements are covered.

**BUS121-A Business Communications 3**
Emphasis is placed on communication skills necessary for employment. Proper grammar, sentence structure, punctuation, and complete message are emphasized. Written business communications, including letters, memos job application procedures, including resumés and letters will be covered.

**BUS123-E Future At Work Business Capstone 3**
This course is designed to serve as a capstone class for students interested in a Business career. The course will apply knowledge learned in business curriculum including accounting, management, marketing, information technology, and office systems. Students will use critical thinking skills and teamwork in a business environment. This course provides students with the opportunity to gain practical experience in the business environment.

**BUS128-A Foundation to Entrepreneurship 3**
Foundation to Entrepreneurship emphasizes these processes: understanding how to find, analyze and pursue opportunity, understanding oneself and personality characteristics of the entrepreneur examining the environment for entrepreneurship. A case and experiential approach is used throughout.

**BUS130-E Introduction to Entrepreneurship 3**
This course examines the qualities and skills essential to successful entrepreneurship. It includes opportunity identification, feasibility analysis, initiation strategies, site location, marketing and financing. Types of ownership, franchising, and development of a business plan are covered. You will examine and learn critical skills for successful business formation and growth.

**BUS135-A Managing the Entreprep Venture 3**
This course will introduce the student to contemporary business, its nature and environment. Also, this course will provide exposure to managerial functions such as planning, decision making, staffing, organizing and directing. The student will develop a basic understanding of financial accounting concepts and systems. This course also provides a comprehensive introduction to the diversified services offered by the banking industry.

**BUS139-E Entrepreneurial Internship 3**
During this internship, you will be offered practical experience on the job at a new/expanding business under the guidance of an entrepreneur who will serve as a mentor. Designed primarily for college transfer students to provide a work experience directly related to their career/ college objectives, the internship focuses on the process of developing an awareness of all aspects of new business development. You will work a minimum of 100 hours, maintain a journal of your experience, and develop a Business Review with recommendations on how the venture could become even more effective.

**BUS147-A The Successful Entrepreneur 3**
This course will provide an integrated, analytical and managerial approach to the study of marketing. Legal issues, financial and economic forces are also analyzed as relative to becoming a successful entrepreneur.

**BUS150-A E-Commerce 3**
This course will address the new technological environment that marketers are facing in the business world today. You will explore the basics of marketing exchange utilizing the information highway, multimedia techniques, database marketing, interactive telecommunications, and other e-business techniques.

**BUS161-A Human Relations 3**
Human Relations emphasizes the importance of the development of proper attitudes toward self, others, and organizational settings. This course stresses the development of a good self image and the relationship this has to energy levels, emotions, defensiveness, verbal and nonverbal communication.

**BUS162-C Workplace Professionalism 3**
This course is designed to provide students with skills for success on the job and the tools for obtaining and maintaining employment. This course will also teach students how to communicate in a professional manner, maturely deal with conflict, behave in a fair and ethical manner, be accountable to team members, and develop leadership skills. In addition, students will learn about expectations related to appropriate use of technology, suitable workplace attire, proper business etiquette, and other self-management techniques.

**BUS165-A Introduction to Leadership 3**
Overview of leadership theory and skills for development of a personal philosophy of leadership, self-assessments, leadership models, study of groups, culture, and communities and apply what is learned in experiential learning settings geared toward emerging student leaders and working professionals.

**BUS166-A Applied Leadership 3**
This course is designed to aid students in developing their leadership style. Students will complete self-assessments, group work, reflection logs, and apply their learnings/findings to various leadership activities inside and outside the classroom. This course is geared toward emerging student leaders and working professionals. Prerequisite: BUS165 Introduction to Leadership or instructor approval.

**BUS167-A Leadership and Professionalism 1**
This course is designed to provide students the opportunity to develop professional growth in the areas of leadership, community service, cooperation, patriotism, and business knowledge. Students will be provided opportunities to demonstrate and refine leadership skills both inside and outside of the classroom.

**BUS180-A Business Ethics 3**
Study of ethical principles and the application of ethical principles to situations relevant to decision-making in the professional and business world.

**BUS185-A Business Law I 3**
This course covers the legal environment of business. The study of contract requirements, personal property and bailments are examined, as time permits.

**BUS186-A Business Law II 3**
This course is a continuation of Business Law I in the area of sales, principal agent relationships, commercial paper, creditor rights, and secured transactions, real property, and bankruptcy. Prerequisite: BUS185-A

**BUS197-A Leadership Development 3**
This course explores leadership styles effective in today's workplace. It helps participants gain insight into their natural leadership style and the implications of that style on work and group performance. The student is provided with practical, down-to-earth principles and concepts of leadership which are reinforced with related activities, exercises, discussions and cases to maximize leadership development. The student will gain a better perspective of him/herself and others while learning and applying the important elements of leadership.

**BUS210-A Business Statistics 3**
Applications of statistics in a business context and use of computer software for statistics are covered in this course. Prerequisite: MAT156-A

**BUS212-A Business Statistics II 3**
This is a 3-credit hour course designed to develop the understanding of applications of statistics in a business context and use of computer software for statistics. Prerequisite: BUS210-A

**BUS238-A Business Problem Solving 3**
A capstone course for those students in business and computer science programs. The course will apply knowledge learned in business curriculum including accounting, management, marketing, information technology, e-commerce and office systems through the development of business strategy and implementation.

**BUS250-A Principles of Real Estate 3**
This course addresses the subjects of purchasing, managing, and disposing of real estate with the emphasis on fundamentals of real estate law, financing, real property interest, appraising, and government regulation.

**BUS265-A Risk Management 3**
This course is designed to give you an understanding of the risks in your life. This course will emphasize the four methods of dealing with risk: avoidance, reduction, retention, and transfer. Specifically, the course will cover insurance as a vehicle to transfer risk across the following areas: life, health, property, liability, auto, and business ownership.

**BUS932-A Internship 3**
Internship I is an optional course designed for summer term completion. This course provides an opportunity for students to gain practical and professional work experience through on-site training in an approved management setting. The actual training on the job site will be under the supervision of a designated person in the sponsoring organization/ business. Internship hours are scheduled on an arranged basis. The total internship requirement is 200 hours of on-the-job supervised experience. Students may or may not be paid wages during the internship.

## COMPUTER AIDED DRAFTING

**CAD101-C Introduction to CAD 3**
The student will be introduced to the use of Computer-Aided Drafting software to make drawings of various objects. Students will create and modify drawings, print hard copies, and change the drawing environment to meet task requirements. Prerequisite: MFG122-E

**CAD167-E Introduction to Parametric Modeling 5**
This course is a combined collaborative learning and lab course. An introduction to computer-aided drafting using AutoDesk Inventor software. Develops skills in Inventor's basic commands and specific command sequence operations. Data entry will be by keyboard and pull down menus. Prerequisite: MFG122-E

**CAD231-C Geometric Dimensioning & Tolerancing 4**
Proper application of Geometric Dimensioning and Tolerancing (GD&T) is an important part of providing complete documentation/description for product creation. This course will provide you with an expanded, in-depth look at applying dimensioning and tolerancing, as defined in the ASME Y14.5M standard for Dimensioning and Tolerancing. Dimensioning and Tolerancing not only apply to blueprints, but also manufacturing and inspection. This course will show you how to apply dimensions and tolerances to drawings, while showing how they relate to production and quality control practices. Prerequisite: MFG191-C or instructor approval.

**CAD246-C Parametric CAD I 3**
Parametric solid model CAD basics will be taught. Parametric concepts with design intent will be covered. Solid CAD models will be built and edited. Mechanical assemblies will be created. Part and assembly drawings with part lists will be created and plotted. Prerequisite: MFG191-C

**CAD248-C Parametric CAD II 3**
Parametric solid model CAD intermediate commands will be taught. Parametric concepts with design intent will be covered. Solid CAD models will be built and edited. Mechanical assemblies will be created. Part and assembly drawings with part lists will be created and plotted. Prerequisite: CAD246-C

**CAD266-E Residential Architecture 2**
Residential Architecture is designed to introduce the student to disciplines and practices used in Architectural Drafting, strengthen the skill set concepts necessary to engage in and execute Architectural Drafting practices, and to prepare the student for the application of this skill set in the workforce. The course has been organized into eight assessment areas which will provide students with the basic information necessary for planning residential dwellings. Upon completion of this course, the student will have a set of portfolio-ready drawings.

**CAD268-E Virtual Reality Design 2**
The Virtual Reality Design allows students an opportunity to develop and expand their learning across the curriculum by capturing student interest through the use of Virtual Reality and 3D. Students become self-motivated learners and mentors for their peers, choosing to create VR projects related to their own interests and for educational use within the consortia. Student projects serve to both demonstrate the designer's competency on key national and state learning standards and to provide avenues for other students to better understand and demonstrate their learning against key standards.

## COMPUTER FORENSICS

**CFR110-C Ethics in the Information Age 3**
A study of ethics and moral philosophy as a means for providing a framework for ethically grounded decision making in the information age.

## CHEMISTRY

**CHM110-A Introduction to Chemistry 3**
Designed for the student with no high school chemistry background. A study of chemistry in our lives and basic chemical principles. An introduction to the composition and properties of matter, bond types, acids and bases, and a description of the major branches of chemistry. This is a non-lab science course.

**CHM111-A Introduction to Chemistry Lab 1**
This course shall accompany CHM110-A; Corequisite: CHM110-A

**CHM122-A Introduction to General Chemistry 4**
The first course in a sequence of two basic Chemistry courses. An elementary approach to chemical principles and laboratory practices. Emphasizes the nature of matter, bonding, nomenclature, equations, acids and bases, and chemistry as applied to everyday life. Intended to fulfill laboratory science requirements and to fulfill chemistry requirements for nursing, dental hygiene, or some home economics and agriculture programs.

**CHM125-A General Organic & Bio Chemistry And Biological Chemistry Lab 3**
This course is a study of the concepts of general chemistry including atomic structure, bonding, reactions, stoichiometry, gas laws, solutions, acids and bases, equilibrium, nuclear chemistry, and an introduction to organic and biochemistry. Recommended for non science majors and students in the health related programs. Corequisite: CHM126-A

**CHM126-A General Organic & Bio Chemistry Lab And Biological Chemistry Lab 1**
This course shall accompany CHM125-A; Corequisite: CHM125-A

**CHM132-A Introduction to Organic and Biochemistry 4**
Study of aliphatic and aromatic compounds, their chemistry and uses in consumer products such as polymers, drugs and foods. Attention is also given to biologically important compounds: proteins, nucleic acids, carbohydrates and lipids and the chemistry of these molecules in the living organism. Prerequisite: CHM122

**CHM151-A College Chemistry I 4**
This is an introductory chemistry course which will provide a survey of general and inorganic chemistry. During the course of the semester we will cover: matter measurements atoms, molecules, and ions, formulas and equations, stoichiometry, atomic structure and bonding, nomenclature gases and the gas laws, water and solutions, acids and bases, oxidation and reduction and chemical equilibrium. Lecture and laboratory.

**CHM152-A College Chemistry II 4**
A continuation of CHM151-A, this course covers kinetics and equilibrium of chemical reactions as well as acid-base theory. Hydrocarbon naming and reactions are also covered, including alcohols, carbohydrates, amines, acids, acid derivatives, lipids, amino acids, nucleic acids, and proteins, DNA, RNA and metabolism. Lecture and laboratory. Prerequisite: CHM151-A

**CHM163-A General Chemistry I 3**
This course is a study of major topics from inorganic chemistry and introductory topics from organic chemistry. Major topics include atomic structure, compounds and bonds, chemical equations, gases, bonding, thermochemistry, liquids and solids, solution chemistry, and major hydrocarbons. This course is designed for science majors. Corequisite: CHM164-A, High school chemistry and/or algebra recommended.

**CHM164-A General Chemistry I Lab 1**
This course shall accompany CHM163. Corequisite: CHM163-A

**CHM166-A General Chemistry I 5**
This is part of a year long rigorous survey of General Chemistry. This course will provide a survey of general and inorganic chemistry. During the course of the semester we will cover: matter measurements atoms, molecules, and ions formulas and equations, stoichiometry, atomic structure and bonding, nomenclature gases and the gas laws water and solutions, acids and bases oxidation and reduction and chemical equilibrium. This is the online version.

**CHM173-A General Chemistry II 3**
This course is a continuation of General Chemistry I. The major topics of study include: chemical kinetics, chemical equilibrium, acid/base chemistry, thermodynamics, electrochemistry, organic chemistry, and biochemistry. Prerequisite: CHM163-A; Corequisite: CHM174-A

**CHM174-A General Chemistry II Lab 1**
This course shall accompany CHM173-A; Corequisite: CHM173-A

**CHM176-A General Chemistry II 5**
Continuation of CHM166. Acids and bases, oxidation/reduction, kinetics and equilibrium, solubility products, nuclear chemistry, kinetics, equilibrium, thermodynamics, electrochemistry, coordination complexes, qualitative analysis, and an introduction to organic chemistry. Problem solving in each of the areas is included. Includes microscale and semi-microscale lab. Lecture and Lab. Prerequisite: CHM-166

# COMPUTER PROGRAMMING

**CIS121-E Introduction to Programming Logic 3**
A comprehensive, language-independent introduction to program logic and design techniques. Included concepts are flowcharting, hierarchy charts, pseudo-code, and documentation. Students will learn to build complete programs that will translate into modern programming languages. They will also learn to use elements of decision making, looping, control breaks, arrays, cohesion, and coupling. The advanced topics of menus, data validation, modularization, object orientation, and event-driven graphical user interfaces (GUIs) will also be presented.

**CIS140-A Intro to Game Design 3**
This course is an introductory overview of the electronic game development process and underlines the historical context, content creation strategies, and future trends in the industry. The course will also explain how games are produced, tested and released. The game industry is the fastest growing segment of the entertainment market and an excellent field for career advancement.

**CIS161-A C++ 3**
This course is designed to give students a basic understanding of the C++ language. Topics covered include the Visual C++ environment, variables, calculations, loop structures, decision structures, arrays, functions, and function templates. Object Oriented Programming is introduced.

**CIS169-C C++ 3**
This course is an introduction to the C# language. Object-oriented programs will be developed by students.

**CIS171-E Java 3**
A comprehensive JAVA programming course which introduces students to object-oriented programming concepts along with the JAVA syntax to implement them. JAVA applications are introduced prior to applets, so the student has more thorough understanding of the concepts used in object-oriented programming.

**CIS176-E Java II 4**
This course will build on the first Java course with advanced topics. Using Java, you will learn fundamental problem solving and object-orientated programming skills by focusing on data abstraction, recursion, generic types, iterators, the Java Collections Framework, and Unified Modeling Language (UML). You will also focus on software engineering principles, searching, linked lists, stacks, queues, sorting algorithms, trees, and graphs. Prerequisite: CIS143-E

**CIS185-C Oracle Academy: Database Design 5**
This course is the first in a two-course sequence of database design and development courses sponsored by Oracle. Students will identify business needs and create the database conceptual and physical models to meet those needs.

**CIS205-A Fundamentals of Web Programming 2**
This is a combined lecture and lab course that comprehensively covers the latest version of HTML. Students will be introduced to the concepts associated with HTML and basic web page construction such as building tables, frames, and forms, using container objects such as SPAN and DIV, utilizing Cascading Style Sheets to manage presentation, and using FTP programs to push their web pages to a web server. Students will also learn about well-formed HTML documents, and they will learn how to employ Meta tags to help describe their pages.

**CIS210-A Web Development I 3**
This course is designed to provide students with the necessary tools and skill set to evaluate, design, construct and maintain internet web pages and web sites. Topics covered include: basic HTML and DHTML statement syntax, hypertext links, color, graphic, tables, frames, forms, JavaScript, and Multimedia.

**CIS211-A Web Development II 3**
Students will learn how to evaluate, design, construct and maintain interactive Internet Web pages and Web sites using Dynamic Hyper Text Markup Language (DHTML). Topics include: JavaScript, server-side and client-side programs, variables, arrays, control structures, form validation, object properties. Prerequisite: CIS210.

**CIS215-A Server Side Web Programming 3**
Introduces several of the most common server-sided scripting languages used in business today. The programming constructs used in these languages are covered. Scripts are designed, programmed, tested, and debugged.

**CIS224-E Server Side Scripting 4**
This course introduces several of the most common server-sided scripting languages used in business today. The programming constructs used in these languages are covered. Scripts are designed, programmed, tested, and debugged.

**CIS251-E Fundamentals of Web Design I 3**
This course stresses a hands-on approach to web design. Fundamentals of Web Design will focus on the overall production processes surrounding web site design with particular emphasis on design elements such as layout, navigation and interactivity. The prerequisite for this course is Web Development I or equivalent experience.

**CIS252-E Fundamentals of Web Design II 3**
This course provides an intermediate level exploration of web site production processes with particular emphasis on security, marketing, navigation, and interactivity.

**CIS280-E Client Side Scripting 3**
This course will introduce students to a survey of scripting languages and instruct students to use JavaScript client-side scripting language resources and techniques and Visual Basic Script language to create interactive web sites, Web programming,data processing and application extension, including programming concepts as they apply to scripting.

**CIS307-A Introduction to Databases 3**
This course provides the student with an overview of database management systems. The student will learn about database fundamentals, database modeling, Structured Query Language (SQL), database administration and current issues. Through hands-on exercises, students will develop databases on different platforms.

**CIS332-C Database and SQL 3**
This course is an introduction to SQL as a database programming language to those already familiar with basic relational database concepts. Students will write executable SQL statements to create and maintain database objects.

**CIS333-A Data Base and SQL 4**
This is a combined lecture and lab course that provides instruction and experience in programming with relational database access. It references and/or uses data base software.

**CIS334-C PHP/Apache/MySQL 3**
Introduces PHP, Apache and MySQL open source technologies used to create dynamic, database-driven Web applications. Students create MySQL databases and use server-side scripting language (PHP) to write applications that interact with the database through Apache Web server technology.

**CIS606-E Visual Basic.NET I 3**
This is a combined lecture and lab course that introduces Windows programming using Microsoft's .NET framework. Students will write introductory level programs involving variables, assignment, input and output using graphical user interface (GUI), calculations, repetition and selection between alternatives using the .NET environment.

## CULTURAL STUDIES

**CLS150-A Latin American History & Culture 3**
This course is designed to introduce Latin America—a region encompassing Mexico, Central America, South America, and the Caribbean. Emphasizing Latin American geography, history, culture, and politics, the course explores the links between the region's complex past and present circumstances. Emphasis is placed on how Latin Americans view themselves and how their history and culture differ from those of the United States and Europe.

## COMMUNICATIONS

**COM140-A Introduction to Mass Media 3**
Introductory course examining the history, evolution and relationships of the media in and the effects on our society. Course includes both the print and electronic media as well as ethics, advertising and public relations. Recommended for students majoring in communication, journalism or U.S. culture.

**COM712-E Business Communications 3**
This course focuses on the application of current business writing and speaking techniques to actual business situations. Writing correctly and effectively will be stressed. Course units include grammar and style written business forms including memos, letters, and reports and job-search skills. Writing projects require the use of a word processing program therefore, computer experience is recommended.

**COM741-E Oral Communications 3**
This course is designed to improve self-expression and give you confidence in communicating ideas.

**COM753-E Technical Communications 3**
This course is designed to prepare students for the oral and written communication situations in various occupational areas, with a particular emphasis in applied technology. The major areas of study include writing technical documents (including development and design), oral communications, and using Formal Written Standard English.

## CRIMINAL JUSTICE

**CRJ100-A Introduction to Criminal Justice 3**
Introduction to Criminal Justice introduces the agencies and processes involved in the apprehension, conviction, and punishment of criminal offenders. Topics include law and the Constitution, the purpose of law enforcement, the role of the police officer, federal and state courts, penal institutions, probation and parole in present day life.

**CRJ101-A Ethics in Criminal Justice 3**
Covers the ethical standards and codes of professional behavior for police officers and others placed in positions of public trust. Includes use of force, gratuities, intra- and inter-agency conduct, integrity, ethical necessity of due process and on duty and off duty conduct.

**CRJ118-A Law Enforcement 3**
A survey course about the historical development of law enforcement, the functions of local, state and federal law enforcement agencies, police subculture, the function of patrol and other issues important to the field of policing. The use of police authority, police discretion, police violence and police corruption will be introduced.

**CRJ120-A Introduction to Corrections 3**
This course presents the development of correctional theory, the correctional client, trial sentencing and institution involved, and the rehabilitation potential through probation and parole.

**CRJ130-A Criminal Law** **3**
Criminal Law examines the means by which society attempts to use criminal law to prevent harm to society. It examines the acts that are declared criminal and the punishment for committing those acts, as well as current substantive criminal law, English common law, and the United States Constitution. Topics include crimes against the person, such as homicide crimes against property and habitation, such as burglary and crimes against public order and morals, such as sodomy. Students also examine defenses against prosecution, such as insanity and entrapment.

**CRJ141-A Criminal Investigation** **3**
Covers fundamentals of investigation including interviewing and interrogating collecting and preserving evidence modus operandi crime scene search etc.

**CRJ200-A Criminology** **3**
Criminology surveys the history, nature, and causes of crime, criminal behavior patterns, investigation, and prosecution correctional methods and the structure of the prison system. The criminal behavior patterns include violent crimes, property crime, political crime, white collar crime, organized crime, and public order crime.

**CRJ207-A Drug Use and Abuse** **3**
Designed to help the student understand sociological aspects of drug use, abuse and treatment.

## COMPUTER SCIENCE

**CSC110-A Introduction to Computers** **3**
This course is designed as an introductory computer course for the student with little or no IBM-based computer experience. You will become familiar with the computer by completing hands-on computer work during class time. You will be introduced to operating system concepts and will learn about the capabilities of word processing, spreadsheets, databases, presentations, and the Internet.

**CSC115-A Introduction to Computers II** **3**
In this course you will study software applications and project orientation including presentation software, software packages capable of desktop publishing, software tools to write for publication on the Internet, and the use of the Internet browsers as software tools. You will learn page structuring, text formatting, graphics, plus error recognition and troubleshooting. Prerequisite: CSC110-A

**CSC116-A Information Computing** **3**
This course presents the basic concepts of information systems and computer literacy. The course incorporates theory as well as hands-on practice, which focuses on spreadsheets and database management systems (DBMS). An introductory course covering Microsoft Excel and Access is highly recommended prior to taking this course.

**CSC142-A Computer Science** **4**
The first in a two-semester sequence of courses that introduces a student to the discipline of computing using a modern programming language. Through extensive practice in coding, debugging, testing, and documentation, students gain exposure to development of problem-solving strategies, algorithm design, and top-down design principles.

**CSC153-A Data Structures** **4**
This is the second in a two-semester sequence of introductory computing courses. This course introduces a student to advanced features of a modern programming language. Topics emphasized are data structures, recursion, data abstraction, and sort/search algorithm analysis. Prerequisite: CSC142

## FILM & THEATRE

**DRA101-A Introduction to Theatre** **3**
Introduction to Theatre helps the student develop an awareness and an appreciation for the impact that drama has had on Western Civilization. This course traces 2,500 years of drama history and shows the major stages of development as they have occurred in theatre. Play genre, theatrical architecture, theatrical design, and the technical aspects of theatre are related areas of concentration to be explored.

**DRA110-A Introduction to Film** **3**
Designed to introduce the student to the history, evolution, philosophic, artistic and economic aspects of motion pictures and the filmmaking industry. Students will have the opportunity to examine the various genres of the movie industry - drama, film noir, western, fantasy, documentary, romantic comedy, horror, musicals, silent films, etc. Utilizing film excerpts and entire movies as tools, students will hone skills in film analysis, beginning with recognition.

## DIESEL

**DSL101-E Diesel Shop Safety** **1**
This course is designed to prepare students for their career in the diesel equipment industry. During this course students will learn about lab safety as it pertains to this career. This course teaches safe practices in working with hand and power tools, equipment lifts, PPE and safe equipment operation practices. It will also teach location specific practices dealing with used oil and antifreeze disposal and containment materials. The course introduces students to maintenance and repair service procedures, computer programs, parts room policies. Students will become familiar with industry software that will be utilized for service information and diagnostics.

**DSL152-E Heavy Duty Electrical Systems 6**
This course covers the theory and application of the fundamentals of basic electricity and electrical systems. Topics include batteries, starting and charging systems, instrumentation, wiring and lighting, VOM operation within 12V and 24V systems, series and parallel circuits, schematics, diagnostics and repair. Prerequisite: DSL101

**DSL154-E Introduction to Equipment Service 4**
This is an introductory course designed to acquaint you with maintenance and service on diesel equipment. The course includes preventive maintenance inspections and federal DOT inspections. You will learn lubrication and service procedures covering grease and oil types and classifications, oil sampling, cooling systems maintenance and testing, and brake and clutch inspection and adjustments. Prerequisites: DSL101, DSL152

**DSL157-E Introduction to Diesel Electronics 4**
This course is to familiarize you with the components and controls of electronically controlled diesel equipment. You will study electronic control modules (ECM), sensors, can-BUSS standards, and electronic unit injectors (EUI). This course concentrates on theory, diagnostics, schematic diagrams, repair, and parameter changes of electronic-controlled systems. Prerequisite: DSL324

**DSL158-E Hydraulics Fundamentals 4**
This course provides you with a basic understanding of fluid power as used in the diesel equipment industry. You will be introduced to the theory, schematics and operation of hydraulic components used in today's equipment. Provides hands-on practice rebuilding hydraulic components, testing and troubleshooting hydraulic systems. Prerequisite: DSL154

**DSL159-E Power Trains/Drive Lines & Suspensions 5**
This course is designed to provide the necessary knowledge to service and repair axle assemblies, transmissions, clutches, drive lines, suspensions, and steering systems. You will learn how to remove, disassemble, inspect, repair, reassemble and reinstall the components. Diagnosis, failure analysis, and parts evaluation are included. Prerequisite: AUT139, DSL636; Corequisite: DSL810

**DSL324-E Introduction to Diesel 4**
This course explains the concepts of diesel engine design and internal combustion engines. Included are disassembly, inspection, measurement, and reassembly of the engine and its components. Special emphasis will be given to diesel engine troubleshooting, repair, parts failure analysis, and fuel systems. Prerequisites: DSL101, DSL152, DSL154

**DSL636-E Air Systems & Brakes 4**
This course begins with the theory and application of basic hydraulic disc and drum brake operation and service. The course expands into the operation and repair of the complete air brake systems used on diesel equipment. Anti-lock brakes, traction control and stability management systems are also covered. The D.O.T. safety standards and regulations are included. Prerequisite: DSL154

**DSL710-E Heating, Air Conditioning and Refrigeration 4**
This course covers the principles of operation of basic heating, ventilation, and air conditioning systems. Provides students with hands-on practice necessary to diagnose, service, and repair HVAC systems including the identification, recovery and recycling of refrigerants. Prerequisite: DSL157

**DSL810-C Truck & Diesel Lab I 10**
This course allows you to work in a real life repair and service atmosphere where you are exposed to all types of equipment and components used in the trucking industries. Prerequisites: AUT139, DSL157, DSL158, DSL636, DSL710; Corequisite: DSL159

**DSL811-E Advanced Diesel Electronics 2**
This course continues the study of electronic controls and diesel engine electronics of the major OEM manufacturers. Emphasis will be on troubleshooting and diagnostics, controls, programming, schematics and required test equipment. Prerequisite: DSL157; Corequisites: DSL812, DSL820

**DSL812-E Advanced Diesel Engines & Fuel Systems 2**
This course will provide advanced procedures for troubleshooting engines, fuel systems and components. You will diagnose drivability complaints such as: noises, vibrations, engine miss, and low power. You will learn practical applications of disassembly, measurement, failure analysis, parts inspection and repair of diesel engines and fuel systems. Prerequisites: DSL157, DSL324; Corequisites: DSL811, DSL820

**DSL813-E Advanced Hydraulics 3**
deals with the interplay of biological factors, human interactions, cultural forces and social structures which shape the growing child from conception to adolescence.

**DSL820-C Truck & Diesel Lab II 10**
This is a continuation of Truck and Diesel Lab I. You perform repairs and troubleshooting as required in an actual work situation. Prerequisite: DSL810-C; Corequisites: DSL811, DSL812

**DSL824-C Truck & Diesel Lab III 4**
A continuation of Truck and Diesel Lab I and II, you will perform hands-on repairs which simulate conditions related to the truck and diesel repair and service industry. Prerequisite: DSL820-C; Corequisite: DSL813

**DSL881-E Diesel Internship I 3**
Students will work as an entry-level technician at an instructor-approved dealership or repair shop. You will be able to apply the principles and techniques learned during the first year to experience the industry as an employee while having the advantage of being supervised by a service manager and program instructor. In order to participate in this course a student must have a cumulative grade point of 2.0 or greater and an instructor-approved training location. Prerequisites: AUT139, DSL157, DSL158, DSL636, DSL710

## DISABILITY SERVICES

**DSV160-A Counseling Skills 4**
This is an introductory course in applied counseling techniques. Students are introduced to a variety of facilitative skills and counseling concepts and work through the interviewing process in simulated helping services settings.

## EARLY CHILDHOOD EDUCATION

**ECE103-E Intro to Early Childhood Ed 3**
This course is designed to give students a background of information in the field of Early Childhood Education. It provides an overview of philosophy, history, roles, environments, observation, learning of the young child, issues and trends in the early childhood and early childhood special education fields.

**ECE133-A Child Health, Safety and Nutrition 3**
This course focuses on current concepts in the fields of health, safety and nutrition and their relationship to the growth and development of the young child ages birth to eight. It blends current theory with practical applications and assessments. The course includes the influences of families and diverse cultural backgrounds on health, safety, and nutrition in early childhood settings.

**ECE158-A Early Childhood Curriculum I 3**
This course focuses on the development, implementation and assessment of appropriate environments and curricula for young children ages three through eight years old. Students prepare to utilize evidence-based, developmentally appropriate practices in the context of children's family, culture, language and abilities. Emphasis is on understanding children's developmental stages and developing appropriate learning opportunities, interactions and environments to support each child in the following areas: dramatic play, art, music, fine and gross motor play.

**ECE170-A Child Growth and Development 3**
This course offers a review of the typical and atypical development of children from conception to adolescence in all development domains, including developmental theoretical studies. The course also presents interactions between child, family and society within a variety of community and cultural contexts.

**ECE221-A Infant/Toddler Care and Education 3**
This course focuses on the care, education, and assessment of children from birth to thirty-six months. It prepares students to utilize developmentally appropriate practices including responsive care giving, routines as curriculum, importance of relationships with diverse families, and a focus on the whole child in inclusive settings.

**ECE243-E Early Childhood Guidance 3**
Focuses on effective approaches and positive guidance strategies for supporting the development of all children. Emphasizes supportive interactions and developmentally appropriate environments. Uses assessment to analyze and guide behaviors. Studies impact of families and diversity on child guidance.

**ECE245-E Guidance and Interaction 4**
This course involves the study of children's behavior and guidance techniques that are appropriate for young children. Students will observe and record behavior and will be expected to use appropriate guidance techniques.

**ECE287-E Exceptional Learner 3**
This course is a study of special education and the talented and gifted, which includes foundations, assessment procedures, program planning, and curriculum adaptations for young children.

**ECE290-A Early Childhood Program Administration 3**
Addresses the function common to administering quality child care programs, planning, implementation, operating and evaluating. Aspects covered include director responsibilities, policy setting, staff development, fiscal and facility management, parent involvement and marketing.

**ECE295-E Supervision of Childcare Services 5**
Topics included management process and approaches, staffing, health & safety, food and nutrition, family and professionalism.

## ECONOMICS

**ECN110-A Introduction to Economics 3**
This course introduces you to the pricing mechanism, the role of demand and supply elasticity of demand and competitive, oligopolistic, and monopolistic prices. The focus is on those principles that explain the economic basis for how our society functions.

**ECN120-A Principles of Macroeconomics 3**
This course is an introduction to basic macroeconomics theory. You will gain an understanding of the economizing problem, supply and demand, national income, distribution of income, employment, price levels, business cycles, fiscal and monetary policy, elements of banking and finance, and analyze current economic problems.

**ECN130-A Principles of Microeconomics 3**
This course is an introduction to basic microeconomics theory. You will gain an understanding of supply and demand, competition, market structure, resource allocation, the price system, output determination, economic effects on the individual and the firm, and analyze current economic problems.

# EDUCATION

**EDU150-A Directed Observation 1**
In this course, you will observe in an education setting to gain direct insight in the way schools function, roles and responsibilities of teachers, and student behavior.

**EDU210-A Foundations of Education 3**
This course is an examination of teaching as a potential career, discussions of the goals of education, roles of teachers, historical development of education, educational reforms, alternative and current philosophical issues, and human relations aspects of teachings.

**EDU213 Introduction to Education 3**
This course presents an overview of the field of education, including foundations of American education, effective teacher characteristics, student engagement, philosophies of education and curriculum development. Current challenges and issues in regards to education will be discussed and analyzed on topics such as school funding, professionalism, ethical and legal issues, student diversity and classroom management. Students will complete a 40-hour practicum at the elementary, middle or high school level in which an emphasis is placed on educational theory, creating document for a teaching portfolio documenting the students understanding of the Iowa Teaching Standards. This course is recommended for students who plan to major in education.

**EDU220-A Human Relations for the Classroom Teacher 3**
This course is designed to develop an awareness of the responsibility of educators in establishing educational programs that attempt to develop sensitivity to and understanding of the different cultural/ethnic groups found in a pluralistic society. This course will include a history of the discrimination that many minority groups have encountered in North America and possible educational strategies for dealing with the problems minority groups have encountered in the educational process.

**EDU230-A Curriculum and Instruction 3**
This course is a study of theories and methods of classroom instruction for students preparing to become elementary, middle, or secondary teachers. Instructional design, tools, sequencing and organization, questioning, small-group discussions and cooperative learning, and monitoring student successes are examined. Prerequisites: EDU210-A, EDU150-A

**EDU235-A Children's Literature 3**
Teaches the criteria for choosing the best children's literature and applies that criteria to evaluating materials to be used in the classroom.

**EDU240-A Educational Psychology 3**
This course is a study of the psychological principles applicable to the learning process including theories of learning, effective teaching/learning environments, and research pertaining to learning. Prerequisite: EDU210-A

**EDU245-A Exceptional Learner 3**
An introductory course designed to provide the student with an overview of the field of special education and the policies and programs established for the education of exceptional students. It includes an analysis of the nature, incidence and characteristics of the students with physical and mental handicaps, the behavior disordered, the talented and gifted and the learning disabled. This course is required for teacher certification in Iowa and Illinois.

**EDU255-A Technology in the Classroom 3**
Technology in the classroom introduces prospective teacher-prep candidates and other interested students to a variety of digital tools and internet resources along with best practices in the use of tools and technologies for classroom related functions and issues.

# ENGINEERING

**EGR400-E Introduction to Engineering Design 3**
Introduction to Engineering Design uses a design development process while enriching problem solving skills: students create and analyze models using specialized computer software.

**EGR410-E Principles of Engineering 3**
Principles Of Engineering explores technology systems and manufacturing processes addresses the social and political consequences of technological change.

**EGR420-E PLTW-Digital Electronics 3**
Digital Electronics teaches applied logic through work with electronic circuitry, which students also construct and test for functionality.

**EGR440-E PLTW-Biotechnical Engineering 3**
Biotechnical Engineering hones more advanced skills in biology, physics, technology, and mathematics and applies them to real-world biotech fields.

**EGR450-E PLTW-Computer Integrated Manufacturing 3**
Computer Integrated Manufacturing enhances computer modeling skills by applying principles of robotics and automation to the creation of models of three-dimensional designs. Prerequisite: EGR400-A

**EGR460-E PLTW-Civil Engineering and Architecture 3**
Civil Engineering and Architecture introduces students to the interdependent fields of civil engineering and architecture students learn project planning, site planning, and building design.

**EGR470-E PLTW Engineering Design and Development 3**
Engineering Design and Development is a research course that requires students to formulate the solution to an open-ended engineering question. With a community mentor and skills gained in their previous courses, students create written reports on their applications, defend the reports, and submit them to a panel of outside reviewers at the end of the school year. Prerequisites: EGR400-E, EGR450-E

## ELECTRICAL TECHNOLOGY

**EGT103-E Principles of Engineering Design 3**
Principles of Engineering explores technology systems and manufacturing processes addresses the social and political consequences of technological change.

**EGT106-E Explorations in Technology 2**
Explorations in Technology is designed around the essential under-standing that Technology is a reaction to problems and opportunities. Students will learn that technological systems are made up of many parts that require the utilization of human innovation and that each one of us affects the course of technological history. The problem solving and design process will also be introduced with special emphasis on the testing, evaluation, and communication of design solutions. The course is organized into four assessment areas that will develop students knowledge, skills, and disposition necessary to complete the course.

**EGT108-E Principles of Engineering 3**
This course uses a design development process while enriching problem solving skills students create and analyze models using specialized computer software.

**EGT801-E Internship 6**
Students in the Internship program will use the educational experience gained in the first two semesters and summer term at NCC in an internship with an approved employer in one of the following disciplines: installation, testing, maintenance, troubleshooting, programming or calibration of automated industrial control systems. You will find a position and contract your services for 42 days in the fall semester of your second year. With proper documentation and the evaluation of the student by the employer and instructor, credits will be given toward an Industrial Instrumentation & Control degree. A minimum GPA of 2.0 or above is required to participate in the Internship. Student must have a valid driver's license and maintain that valid status for this course. Prerequisites: ELT225-E, ELT329-E, ELT550-E, SDV135-C

## ELECTRICAL TECHNOLOGY

**ELE108-C Residential Blueprint Reading 4**
Residential Blueprint Reading introduces you to circuitry requirements, materials, drawings, and wiring methods employed in residential wiring. Emphasis is placed on reading blueprints, proper use of drafting tools, drawing residential electrical blueprints, load calculation, materials selection, and takeoff for bidding. Corequisite: ELE160-C

**ELE109-C Commercial Blueprint Reading 4**
This course is designed to familiarize you with commercial blueprint reading, layout of electrical systems, and site work. Areas of study are: services, appliance circuits, feeders, emergency power systems, over-current protection, and electric heat. Prerequisites: ELE108-C, ELE150-C

**ELE120-E Fundamentals of Electricity-DC 4**
Using both classroom and lab experiments, this course guides you through the fundamental concepts of direct current (DC) electrical circuitry. The principles of electron flow build from simple DC circuits to complex networks through lecture, video, lab experiments, and computer programs. Mathematics plays a very important role in the solution of circuitry problems and is developed throughout the course from simplistic concepts to more complex processes such as simultaneous equations.

**ELE121-E Fundamentals of Electricity-AC 4**
The fundamental concepts of alternating current (AC) will be explored in theory and in application using lecture, video, lab experiments, and computer models. You will conduct an in-depth study of the actions and reactions of AC on various components of electronic and power circuits. Prerequisite: ELE120-E

**ELE150-C National Electric Code 2**
Study of the electrical industry standards begins with development of terminology, then moves to building upon your developing experience to form proper interpretations of the National Electrical Code (NEC) as it pertains to residential wiring methods.

**ELE154-C Codes and Standards 5**
The design and intent of this course is to acquaint you with the National Electrical Code, OSHA, ANSI, and other related codes and standards that have been established for personal safety and for safe and proper electrical installations. Prerequisite: ELE150-C

**ELE160-C Residential Wiring Theory/Lab 6**
The Residential Wiring Lab introduces you to basic electrical wiring methods, simple circuits, and residential devices and their uses in the electrical trade. This course is taught using the "hands-on" approach. Corequisites: ELE120-E, ELE108-C, ELE150-C

**ELE161-C Commercial Wiring Theory/Lab 8**
Commercial Wiring Theory/Lab introduces you to commercial wiring methods and materials. Included are conduit bending and threading, flexible metal conduit, armored cable, and low voltage control. The National Electrical Code is integrated into all lab projects. Prerequisites: ELE160-C, ELE108-C; Corequisite: ELE109-C

**ELE163-C Electrical Wiring 3**
This course will cover the fundamentals of various types of wiring methods used in industry. There will be both classroom and hands-on application of the NEC in the areas of process control and monitoring. The use and installation of various types of raceways and the selection, installation, and termination of conductors will be stressed. Control voltages, low voltage applications, and hazardous locations will be significant topics for additional discussion. Prerequisite: ELE121-E

**ELE168-C Industrial Wiring Theory/Lab 6**
Through a combination of classroom and lab experiences you will learn wiring methods, systems, and materials unique to industrial and large commercial electrical construction. Included are electric and hydraulic conduit bending, power conduit threading, fire alarm systems, power factor correction and system harmonics. Prerequisites: ELE109-C, ELE161-C

**ELE170-C Power Distribution 2**
This course consists of AC generator and transformer fundamentals, a review of AC characteristics, and a familiarization of various types of AC generators and transformer fundamentals including induction principles. Ratios, losses, efficiency, and uses are presented. Power transformers are taught in-depth and an introduction to special purpose transformers is offered. A thorough presentation of three-phase systems relative to their theories and various configurations of the delta and wye connections will be utilized to prepare the student for practical applications. Prerequisite: ELE121-E

**ELE186-E Relay Logic 4**
This course will provide coverage of control devices and control circuitry used in industrial electrical systems. Coverage will include electrical safety, electrical symbols, line diagrams, relays, motor starters, solenoids, common motor circuits, variable speed drive circuits and the control of pneumatic devices. It is designed to provide hands on training using industrial control equipment. Prerequisite: ELE163-C

**ELE191-C Motor Theory 2**
This course is an overview in the theory of basic motor action of both AC and DC motors. Studies will cover many different types of motors, the characteristics of each, theory of operation, and applications of each as they apply to industry. Prerequisites: ELE121-E, ELE161-C

**ELE199-E Motor Controls Principles 5**
This course will provide coverage of control devices and control circuitry used in industrial electrical systems. Coverage will include electrical safety, electrical symbols, line diagrams, relays, motor starters, solenoids, common motor circuits, reduced voltage starters, and control of electro-pneumatic devices. It is designed to provide hands-on training using industrial control equipment. Prerequisites: ELE121-E, ELE161-C

**ELE211-C Programmable Controllers 5**
This course will cover the major components of a programmable logic control system. Coverage will include electrical safety, PLC hardware, interfacing input-output devices, interfacing electro-pneumatic devices, programming timers, counters, and math functions. The course is designed for individuals having an electrical background. Prerequisite: ELE199-C

**ELE240-E Advanced P L C Applications 3**
This course will focus on instructions and implementation of hardware commonly found in a PLC system. Coverage will include electrical safety, PLC timers, PLC counters, file instructions and program control instructions. Primary concern will be the development of PLC programs and the interfacing of I/O to various field devices found in the automated control industry. This will include electrometrical devices, directional control valves and process control devices. The overall goal of the course is to develop a working knowledge of PLC systems, PLC instructions and how they interface to industrial control field devices. Prerequisite: ELE211-C

**ELE241-E HMI & Motion Control Fundamentals 3**
This course will focus on the development and integration of Human Machine Interface (HMI) systems commonly used in conjunction with Programmable Logic Controllers, (PLC's). Fundamentals of motion control and the equipment commonly used in a PLC controlled process will be presented and implemented throughout the course. Items such as servo motors, servo controllers, variable speed drives, operator interfaces and HMI software are examples of topics that will be covered and applied throughout the course. Primary concern will be the application of HMI devices and motion control hardware to PLC systems. Prerequisite: ELE240-E

**ELE270-C Coop Internship for IC Wiring 6**
Students in the co-op program will use the educational experience gained in the first two semesters at NCC in an internship with an approved co-op station. You will find a position and contract your services for the summer term. With proper documentation and the evaluation of the student by the employer, credits will be given toward an Industrial/ Commercial Wiring Electrical Degree. GPA of 2.0 or above is required. Prerequisites: ELE109-C, ELE161-C

## ELECTRONICS

**ELT112-E Fundamentals of Electronics 6**
This course develops the basic concepts necessary for understanding electronic circuits and devices. You will develop an understanding of electronic components and how the components function in circuits. You will also develop a systematic approach to troubleshooting electronic circuits. Prerequisites: ELE121-E, MAT106-E

**ELT182-C Introduction to Electronics 3**
This course develops the basic concepts necessary for understanding electronic circuits and devices using both AC and DC power. You will develop an understanding of electronic components and how the components function in circuits. You will also develop an understanding of different soldering techniques. Prerequisites: ELE121-E, MAT106-E

**ELT183-C Electronic Control 3**
This course develops the basic concepts necessary for understanding digital logic and devices. You will develop an understanding of digital logic and how the components function in circuits and how they can be combined. You will also develop a systematic approach to troubleshooting digital logic and interfacing digital logic with power control electronic components.

**ELT193-E Computer Programming for Technicians 3**
This is an introductory course in a current programming language or other current programming language. Technical students will learn programming skills that are used to solve problems encountered in their technical careers and that will aid them in dealing with other compiled languages in industry.

**ELT225-E Introduction to PLC's 4**
This course will cover the major components of a programmable logic control system. Coverage will include electrical safety, PLC hardware, interfacing input-output devices, using discrete PLC instructions, interfacing electro-pneumatic devices, and configuring operator interface devices. The course is designed for individuals moving into the industrial control career field and who have an electrical/electronic background. Prerequisite: ELE186-E

**ELT261-E Advanced PLC's 9**
This course will cover the major components of industrial control systems. Coverage will include electrical safety, various PLC platforms, the application of common instructions found in the PLC such as timers, counters, and data manipulation. Also, various industrial control hardware commonly found will be covered and applied. This will include electro-pneumatic devices, analog input-output devices, variable speed drives, motion control equipment, graphical user interfaces, industrial networks and operator interface devices to include Human Machine Interface (HMI) software. Primary concern will be the application of equipment/software used in the process control industry. Prerequisite: ELT225-E

**ELT329-E Digital Electronics for ET 4**
The course presents logic circuits as building blocks for control and instrumentation circuitry. Beginning with the simplest logic circuits, the course progresses through large scale, integration circuitry, electrical characteristics and timing are involved throughout the course. Prerequisites: ELE121-E, MAT123-E or equivalent

**ELT330-C Interfacing Digital Electronic 5**
This course presents logic circuits as building blocks for control and memory circuitry. Beginning with the simplest gate logic circuits, the course progresses to combinational logic and then to sequential logic that uses both SSI and MSI packaging. This course will use electronics to interface both analog and discrete signals to control various devices and apparatuses.

**ELT550-E Analog Devices 4**
Study of diodes, bipolar transistors and field effect transistors (JFETs and MOSFETs) as they are used in both AC and DC electronic circuits. Applications such as power supplies, switching circuits and amplifier circuits are covered. Advanced topics in electronic devices including operational amplifiers (op amps), active filters, thyristors, and voltage regulation are covered. Practical circuit analysis of the devices under study is covered. Both circuit analysis and measurement techniques using meters and oscilloscopes are stressed. Prerequisites: ELE121-E, MAT123-E or equivalent

**ELT631-E Microprocessors & Interfacing 6**
This course will concentrate on the Intel 8086 family of microprocessors that is used in the IBM PCs. The course begins with a brief introduction to computer hardware, which leads to programming the microprocessor using assembly language. Interfacing external hardware such as motors, relays, prox switches, and push buttons is accomplished using an interface buffer card and assembly as a programming language. Prerequisites: ELT193-E, ELT225-E, ELT550-E, ELT329-E

**ELT645-E Process Measurement 10**
This course will concentrate on the measurement and indication of process variables found in a typical industrial environment. The course explains the safe operation and maintenance of sensors, transducers, controllers, final control elements, and other devices used in process control. Calibration of equipment used to measure flow rate, pressure, temperature, and level will be taught using various hands-on training devices. It will also describe the proper use of analytical instrumentation. High-pressure boiler operation and boiler components will be covered. Prerequisites: ELT329-E, ELT550-E, ELT225-E

**ELT646-E Process Control 7**
This course will build on the basics covered in Process Measurement. Primary concern will be the control of measured variables found in an industry. The control of variables will be accomplished using single station controllers. In addition, the course covers data transmission methods and safe ways of maintaining system quality. Prerequisite: ELT645-E

**ELT738-E Instrumentation Process Control 7**
This course will concentrate on the measurement and indication of pressure flow, temperature, and level. The calibration of indicators, transmitters, and controllers will be stressed as well as adjustment of process control loops. Setting up, adjusting, and operating basic process control systems will also be covered. Prerequisite: ELT112-E

**ELT842-C Programming Electronic Control 5**
This course develops basic concepts necessary for understanding electronic circuits and devices using a microcontroller. You will develop an understanding of electronic components and how components function in circuits used in industry. You will also learn about the programing and functions of a microcontroller. This course will apply the use of microcontrollers in industrial applications.

## EMERGENCY MEDICAL SERVICES

**EMS211-A Emergency Medical Technician 6.5**
Emergency Medical Technician develops a basic understanding of emergency care in the field. The course provides the student with the necessary skills to assess, treat, and transport patients of medical and traumatic emergencies. This course follows the national standard curriculum for EMTs.

**EMS219-E EMT Basic I 3**
This section of the Emergency Medical Technician course will include a general study of the human anatomy, medical terminology, legal aspects and the study of the skills needed to treat various injuries and illnesses.

**EMS225-E EMT Basic II 3**
This section of the Emergency Medical Technician course will continue the study of and the skills needed to treat various injuries and illnesses. Instruction related to behavioral emergencies, OB/GYN emergencies, bleeding and shock, and trauma will be covered in detail. Overview of anatomy and physiology, and medical terminology is included. The combined lecture/lab course provides the student an opportunity to apply cognitive knowledge and psychomotor skills in a supervised setting. Prerequisite: EMS219.

## ENGLISH

**ENG013-H Basic Writing 3**
Introductory course designed to help the student who has difficulty in expressing thoughts clearly and effectively in written communication. Emphasis is on improving writing skills by constant practice. Grammar, sentence structures and paragraph structures are studied in the context of writing. This course is recommended for students whose diagnostic or assessment scores indicate a need for supplemental work in composition.

**ENG053-H English Brush Up 2**
English Brush up is a practical guide to the grammar, punctuation, and usage skills you need to write clearly and effectively. The text's self-teaching approach provides abundant practice for concept mastery.

**ENG101-C Elements of Writing 3**
Elements of Writing is designed to meet the needs of students who require additional practice in writing. The course includes a review of grammar and usage skills as well as writing practice involving the process approach of pre-writing, drafting, and rewriting.

**ENG105-A Composition I 3**
This course focuses on developing written communication skills through various experiences including expository, persuasive, and research papers. Instruction will also include basic research and documentation skills.

**ENG106-A Composition II 3**
This course focuses on helping you develop advanced writing skills in order to compose analytical and persuasive essays. You will use advanced research and critical thinking skills to respond to and compose essays based on current issues and enduring questions. Prerequisite: ENG105-A

**ENG107-A Composition I: Technical Writing 3**
A writing, speaking and reading course to prepare students for the types of communication and thought essential to the working world. The general goals of Technical Communication are that students gain more confidence in their writing abilities and improve their proficiency in critical reading and problem-solving, applied to practical situations. Students will also present material orally and visually, with assignments related to their content areas. Emphasis is on the writing process and learning the forms appropriate for technical communication purposes and audiences.

**ENG150-A Fundamentals of English Grammar 3**
Students will study the structure of the English language, particularly the system of principles that allows us to organize words into sentences. Students will look at the three major grammatical theories: traditional, structural, and transformational. The units covered in the course include grammatical categories, constituency, grammatical functions, phrase structure, and clauses.

**ENG221-A Creative Writing 3**
In this course, you will study the elements and technique of writing both poetry and short fiction. You will apply this knowledge in creating original poems and short fiction to include in a creative writing portfolio. In addition, you will use your knowledge in responding to other students' writing during workshop sessions. Prerequisite or Corequisite: ENG105-A

**ENG238-A Creative Writing: Nonfiction 3**
You will explore boundaries of non-fiction and fiction writing with the intent of being published. This will be done through careful observation of factual detail and determined reflection on the part of the student. In exploring expository writing, you will study the styles of some of our country's best known expository writers. Your overall goal is to discover your own writing voice, your own style. You will look at your strong and weak points. You should consider playing to your strong points and adding to them by improving upon your identified weak points. Realize, they are only weaker because they have not been developed. Prerequisite: ENG105

## ENVIRONMENTAL SCIENCE

**ENV111-A Environmental Science 4**
In this course common environmental problems will be surveyed, with discussion as to their possible causes, consequences and remedies. An emphasis will be placed on objective analyses of issues and arguments related to environmental concerns.

**ENV115-A Environmental Science 3**
This is an introductory environmental science course for science and non-science majors. It examines the impact and dependence of humans on the physical and biological environment. Topics include populations, soil, water, energy resources, air, waste management, and environmental ethics.

**ENV116-A Environmental Science Lab 1**
This is an introductory environmental science course for science and non-science majors. It examines the impact and dependence of humans on the physical and biological environment. Topics include populations, soil, water, energy resources, air, waste management, and environmental ethics.

**ENV145-A Conservation Biology 4**
This course examines the ecological principles used in the preservation of biological diversity. Some topics explored are population dynamics, conservation genetics, island biogeography, mathematical modeling of ecological systems, disturbance ecology, Geographic Information Systems (GIS), reserve theory and wildlife corridors. Laboratories will involve field work (or review of summaries of fieldwork), data analysis, computer work and research.

## FINANCE

**FIN101-A Principles of Banking 3**
You will be introduced to basic banking practices. Emphasis will be on the practical aspects of money and banking, including a look at the occupational disciplines within the banking industry. This course will also provide a conceptual study of bank management issues such as organizational management and control.

**FIN121-A Personal Finance 3**
This is a practical course emphasizing the need for effective personal financial management. Units covered include: budgeting, major purchases, credit card usage, personal income tax, insurance, investments, and overall financial planning (short-term and planning for retirement).

**FIN130-A Principles of Finance 3**
An examination of the tools and techniques used in the world of finance. This course will introduce the student to basic financial concepts such as time value of money, asset valuation, risk analysis and return on investment. Evaluation and decision-making techniques will be used as they pertain to financial management in various business situations. Prerequisite: ACC132-A

## FOREIGN LANGUAGE

**FLF141-A Elementary French I 4**
Introductory course for those with no prior background. Students become acquainted with the sounds and structure of French emphasizing useful vocabulary and development of basic conversational skills. Practice supplemented by regular lab activities.

**FLG141-A Elementary German I 4**
In this course you will learn the fundamentals of German. You will learn a variety of new words and grammar points that will allow you to create simple sentences in German.

**FLG142-A Elementary German II 4**
This course is a continuation of Elementary German I with further attention given to the essentials of structure and vocabulary. Prerequisite: FLG141-A

**FLS141-A Elementary Spanish I 4**
Elementary Spanish I is designed to provide students with the basic tools to speak, read, comprehend and write Spanish in an elementary fashion in the present tense. It will also give a brief overview of several Spanish-speaking countries culture. This course is better suited for students that have taken Spanish in High School or have some knowledge of the language.

**FLS142-A Elementary Spanish II 4**
Elementary Spanish II completes the study of Spanish grammar including all the subjunctive and indicative verb tenses with continued emphasis on all communications skills. Prerequisite: FLS141-A

**FLS231-A Intermediate Spanish I 3**
This course is a continuation of the first year of Spanish. You will develop additional proficiency in speaking the language, listening, reading, and writing. Prerequisite: FLS132-A

**FLS232-A Intermediate Spanish II 3**
This course is a continuation of Intermediate Spanish I (see course description). Prerequisite: FLS231-A

**FLS241-A Intermediate Spanish I 4**
In this course, you will continue to foster your skills in reading, writing, listening and speaking Spanish. Intermediate Spanish I develops increased oral and written comprehension and fluency in the Spanish language. Intermediate Spanish I will focus on the subjunctive mood and perfect tenses. Each lesson is thematic in nature. Students will learn about nature, the city, wellbeing, the world of work, the arts and current events. Students review Spanish grammar and utilize a variety of online tools along with readings, video, audio and compositions in Spanish. Prerequisite: FLS142, two years of high school Spanish or consent of instructor.

**FLS242-A Intermediate Spanish II 4**
Intermediate Spanish II gives comprehensive instruction and practice in all aspects of the Spanish language through Spanish literature, short films and biographies.

**FLW141-A Elementary Hebrew I 4**
An introduction to the element of biblical Hebrew script, phonology, morphology, syntax, and vocabulary, including the translation and analysis of selected phrases and texts from the Hebrew scriptures.

**FLW142-A Elementary Hebrew II 4**
A continuing introduction of biblical Hebrew syntax and vocabulary, including the translation and analysis of selected texts from the Hebrew Scriptures. Prerequisite: FLW141

**FLW241-A Intermediate Hebrew I 4**
A review of the grammar, morphology, vocabulary, and syntax of biblical Hebrew. Students translate the biblical books of Jonah, Ruth, and Amos. Prerequisite: FLW142

**FLW242-A Intermediate Hebrew II 4**
Translation and interpretation from various genres of the Hebrew scriptures and from extra-canonical texts. Genres include narrative, case and apodictic law, poetry, proverbs, love songs, and prophecies. Prerequisite: FLW241

**FLW243-A Aramaic 4**
An introduction to the elements of biblical Aramaic script, phonology, morphology, syntax, and vocabulary, including the translation and analysis of every Aramaic text located in the Hebrew scriptures. Prerequisite: FLW242

## GEOGRAPHY

**GEO121-A World Regional Geography 3**
A geographic survey of nations and continents with emphasis on important physical characteristics of the major regions of the world. Attention is devoted to their demographic, economic, political, and cultural development with each other. The course covers physical and cultural geography as well as basic geographical literacy. The human impact on the environment and growing problems of resources are discussed.

**GEO126-A Cultural Geography 3**
This course is an introduction to cultural geography through the study of global patterns of many aspects of human culture, including population, language, religion, urban and rural settlement, and ways of economic livelihood.

## GLOBAL STUDIES

**GLS100-A Contemporary World Issues 3**
An interdisciplinary approach to the study of issues affecting life in the modern world, this course is a single semester in length and identifies topical areas to study as background to major contemporary issues. Typical areas of discussion will be ecology, world economy, resource utilization, geography, and comparative cultures.

## GRAPHIC COMMUNICATIONS

**GRA121-E Digital Drawing 3**
Graphic image design introduction using the Adobe Illustrator program. Students will create both black and white and multicolor graphics using Illustrator's tools and menu commands. A vinyl cutting project will be completed.

**GRA131-E Digital Layout I 3**
This course is an introduction to software used for page layout, print design and publishing. Students are introduced to and practice typography skills by combining text with digital images to create professional layouts. This course also provides the essential skills of digital document construction using Adobe Acrobat. Students learn the skills needed to create a variety of interactive digital documents in the Adobe Portable Document Format.

**GRA132-E Digital Layout II 3**
This course provides instruction in intermediate level page layout software that builds on previously learned skills. This course introduces new techniques with an emphasis on paragraph and character styles, multiple page documents with master pages and the use of libraries.

**GRA140-E Digital Imaging 3**
This course covers an introduction to the Mac OS interface and associated hardware. It also covers the Adobe Photoshop software, which is used to manipulate images used in digital and printed media. Topics include software interface, tools, retouching, collage, scanning, keyboard shortcuts, corrective filters and techniques, color correction and automation.

**GRA141-E Digital Imaging II 3**
This course provides instruction in intermediate level image manipulation that builds on previously learned skills. This course introduces new techniques with an emphasis on web graphics, alpha channels, masking, adjustment layers, and color correction.

**GRA158-E Web Multimedia 3**
An introduction to the creation of multimedia for use with web pages, kiosks, and cd/dvd. Video camcorders, digital cameras, digital recorders, touch screens, and iPods will be utilized in conjunction with computer hardware and software for media creation and manipulation. Media covered in the course will include podcasting, streaming video, streaming audio, live broadcasts, and presentations.

**GRA170-E Graphic Design I 2**
An introduction to the principles of design, typography, and idea generation. Studies the print and web-publishing processes.

**GRA173-E Typography 3**
This course explores the fundamental principles of typography and its role in visual communication. Students will explore both the form and function of typography in design through lectures and demonstrations. Emphasis is placed on the history of type, anatomy of letter forms, and appropriate uses of type.

**GRA201-E Design Principles I 3**
The course is the first in a series that serves as an introduction to the principles of design and idea generation with a strong emphasis on typography. Students explore how these principles are applied in the marketplace.

**GRA207-E Design Principles II 3**
This course is a continuation of Design Principles I with an emphasis on idea generation, presentation, and interpreting client needs. This course also addresses the skills and techniques for planning, tracking, and monitoring design projects. Students learn a practical approach to project management and information design along with addressing usability issues for web design.

**GRA325-E Digital Color Theory 3**
This course provides insight into the effective use of color through the study of contemporary color theory including additive and subtractive color. This course involves the development of color perception, expression, and application in traditional and digital design, through a series of problem solving exercises and projects. Fundamental studio experiences, along with a historical perspective, will provide insight and understanding to the intrinsic power of color in design.

**GRA920-E Graphic Design Capstone 3**
This course prepares student to enter the workforce. Under the guidance of an instructor, students may intern in a professional graphic design setting or explore job seeking strategies, including building a portfolio and resumé.

## HOSPITALITY, CULINARY ARTS, AND MANAGEMENT

**HCM239-A Customer Service 2**
This course will introduce students to all aspects of customer service in the business realm and in the hospitality industry. The students learn the major components of a customer-focused environment and the key elements of a service culture. In order to be better prepared for the future, students identify key trends that will impact customer service in the years to come.

## HEAVY EQUIPMENT

**HEQ131-C Safety and Introduction to Heavy Equipment 3**
This is an introduction to the equipment, jobs, working conditions, maintenance, and safety of equipment operation.

**HEQ152-C Equipment Operation & Maintenance I 4**
This is an introductory course for you to apply earlier knowledge to operate and maintain a broad range of heavy equipment vehicles. Prerequisites: HEQ131-C, HEQ160-C, HEQ161-C, HEQ163-C, HEQ172-C; Corequisites: HEQ155-C

**HEQ155-C Stake and Plan Reading 4**
This course teaches the basic elements of engineering relating to various stakes and plans used in construction projects. Surveying equipment, staking methods, and design plans are used in the application of this course.

**HEQ156-C Equipment Operation & Maintenance II 7**
This is a continuation of Equipment Operation I with more difficult and complicated live projects using all types of equipment. Most projects are off campus. Student must have a valid CDL and maintain that valid status for this course. Prerequisite: HEQ152-C; Corequisite: HEQ157-C

**HEQ157-C Surveying I 2**
A continuation of the Stake and Plan Reading course. Surveying I covers job design, layout, and staking live projects in current construction within the program. Prerequisite: HEQ155-C; Corequisite: HEQ156-C

**HEQ158-C Equipment Operation & Maintenance III 7**
A continuation of Equipment Operation I and II, this class has more emphasis placed on student production, efficiency, and safety in operation. Student must have a valid CDL and maintain that valid status for this course. Prerequisites: HEQ156-C, HEQ157-C

**HEQ160-C Equipment Lubrication & Maintenance 3**
The principles, techniques, and servicing procedures for preventative maintenance of heavy equipment will be taught. The use of servicing schedules is also covered.

**HEQ161-C Equipment Reconditioning Theory I 5**
This course covers the technical information used for troubleshooting, testing, and reconditioning heavy equipment. Prerequisites: HEQ131-C, HEQ160-C; Corequisite: HEQ163-C

**HEQ163-C Equipment Reconditioning Lab I 5**
You will develop skills in inspecting, troubleshooting and reconditioning heavy equipment. Safety procedures in repair are stressed. Corequisite: HEQ161-C

**HEQ172-C CDL-A & DOT Regulations and Lab 3**
This is a classroom course providing information related to taking a commercial drivers license test. Other emphasis is placed on DOT regulations that apply to driving on local, state, and federal roads and highways. You will receive training on the campus driving range, campus roads, and local, state, and federal roads and highways. Defensive driving is stressed.

**HEQ252-C Job Estimating 2**
In this course you will learn the evaluation of quantities and time to move materials with consideration of fuel costs, equipment depreciation, working conditions, labor costs, etc. that are involved in job bidding. You will look at occupations in heavy equipment construction from the employer's viewpoint. Prerequisite: HEQ257-C

**HEQ257-C Surveying II 2**
This course is a continuation of Surveying I with student application to the actual surveying and grade staking of present student projects. Laser surveying equipment is incorporated into the instruction. Prerequisite: HEQ157-C; Corequisites: HEQ158-C, HEQ263-C, HEQ264-C

**HEQ263-C Equipment Reconditioning Theory II 5**
This course builds on Equipment Reconditioning Theory I with a more in-depth study of inspecting, troubleshooting, and reconditioning heavy equipment. Prerequisite: HEQ161-C; Corequisites: HEQ264-C, HEQ158-C, HEQ257-C

**HEQ264-C Equipment Reconditioning Lab II 5**
This course builds on the practical application in the Equipment Reconditioning Lab I course with a more in-depth study of inspection, troubleshooting, and reconditioning heavy equipment. Prerequisite: HEQ163-C; Corequisite: HEQ263-C

**HEQ267-C Equipment Reconditioning Lab III 6**
This course covers visual inspection, diagnosis, and repair of drive train components such as steering clutches, brakes, final drives, and direct and power shift transmissions in crawler tractors and wheeled heavy equipment vehicles. Prerequisite: HEQ264-C

## HISTORY

**HIS110-A Western Civilization: Ancient to Early Modern 3**
This course is a survey of the evolution of Western Civilization from prehistory to the emergence of the nation-state. Topics include the birth of the first civilization Greece and Rome the rise of Christianity the disintegration of the Roman Empire and the Early, High, and Late Middle Ages.

**HIS111-A Western Civilization: Early Modern to Present To Present 3**
This course is a survey of the evolution of Western Civilization from the rise of the nation-state to the present. Major topics include the French Revolution and the Age of Napoleon 19th century developments such as liberalism, the Industrial Revolution, socialism, nationalism, and imperialism and the great wars and upheavals of the 20th century.

**HIS117-A Western Civilization I: Ancient & Medieval 3**
A survey course in Western Civilization from ancient history into the medieval era. The civilization components of religion, philosophy, literature, art, and architecture are integrated into the political and social history of Europe, from our Mesopotamian and Egyptian origins to the end of the Middle Ages.

**HIS118-A Western Civilization II: Early Modern 3**
This is a survey course in Western Civilization from the Renaissance through the Age of Democratic Revolutions. The civilizational components of religion, philosophy, literature, art, science, and architecture are integrated into the political and social history of Europe, from about 1450 to the end of the eighteenth century.

**HIS119-A Western Civilization III: Modern Period 3**
Course will provide the student with a basic understanding of the history of the western hemisphere from the Revolutionary Era to the Present. The class will consider the effects of religion, philosophy, literature, art, politics, technology, and architecture on western history since 1740.

**HIS151-A U.S. History to 1877 3**
This course is a survey of the history of the United States from 1492 to 1877. Topics include the colonial period, the coming of the American Revolution, the Revolutionary War, the formation of the new nation, the coming of the Civil War, and the Civil War and Reconstruction.

**HIS152-A U.S. History Since 1877 3**
This course is a survey of American history from 1877 to the present. Topics include the Industrial Revolution and its effects, the Progressive Movement and the 1920s, the Great Depression and the New Deal, World War II and the Cold War, and the post-World War II decades including the Second Reconstruction and the upheavals of the 1960s.

**HIS201-A Iowa History 3**
Provides an understanding of the history of Iowa as it relates to international history. Special attention is given to ethnic groups and their contributions.

**HIS211-A Modern Asian History 3**
Surveys the historical, geographical, and economic context of the development of the Pacific Basin region: Northeast Asia (China, Japan, Korea, Russia, and the Far East), South East Asia (Laos, Kampuchea, Vietnam, Thailand, Myanmar, and India). Examines issues such as modernity versus traditional, the conflict between east and west, political authority and economic growth in the United States in the Pacific, and cultural differences

**HIS231-A Contemporary World Affairs 3**
This course is a study of current events viewed in their historical context. Emphasis is placed on global politics, domestic issues, and cultural developments.

**HIS251-A U.S. History 1945-Present 3**
Students will investigate the rise of the United States after World War II to the modern country of the present. Topics will include: aftermath of WWII, nuclear power, the Cold War, Vietnam, diplomacy, presidential power, and family life.

**HIS253-A American Indian History & Culture 3**
This course surveys American Indian history and culture in what is now the United States from pre-Columbian times up to the present. Topics include: Pre-Columbian America Spanish, English, and French invasions, Indians and the colonial period, Indian Removal, Indians and American expansion in the Far West, the reservation system allotment, and federal Indian education, the Indian New Deal termination relocation and the growth of urban Native America and Indian militancy, cultural accommodation and revitalization, and the ongoing struggle for sovereignty. This course will challenge you to learn about cultural and historical perspectives often unfamiliar to non-Indians and to discern the Indian point of view for better understanding of the full perspective of Indian history and culture.

**HIS257-A African American History 3**
African American History deals with the experience of blacks in the history of the United States. Topics include African heritage, the slave trade, slavery in the Antebellum South, the Civil War and emancipation, the Jim Crow era, the Harlem Renaissance, the civil rights struggle, and modern black America.

**HIS268-A American Experience in Vietnam 3**
A survey of the 2,000-year history of Vietnam, the French Indochina War and U.S. involvement, the military role, the view from those who participated and discussion of the consequences of American participation in the Asian conflict. The conflict will be viewed within the context of the Cold War and explore the events, attitudes and political scene leading up to the U.S. commitment in Southeast Asia. Exploration of the anti-Vietnam War movement will also take place.

**HIS271-A American Frontier History 3**
This course provides an introduction in North American frontier history. It is important to always remember that a frontier has two sides. The field includes altercations and interactions among European Americans and Native Americans along contested regions, frontiers, and borders. Sovereignty, trade, and culture of British, French, and British imperial powers play important roles in this course. Native American groups are included as well as the moving borders of American, Canadian, and Mexican governments. The course textbook is a slim volume which will be augmented with essays available to all students at the online library. Among the topics investigated include territorial conquest, European-Indian relations, imperial conflict, colonialism, gender relations, racial formation, slavery, captivity, and citizenship.

## HEALTH INFORMATION TECHNOLOGY

**HIT120-E Pharmacology for HIT 1**
This course provides you with an introduction to pharmacology, a basic knowledge of drugs, and drug therapies as they relate to the health information management field. It includes a study of the preparation, use, and action of chemicals and their effect on biological functioning. Prerequisite: HSC113-E

**HIT122-E Registry Organization and Operations 3**
This course will focus on the organization and the operations of a cancer registry. Topics include case identification and follow-up of cancer patients. Students will develop an understanding of organizational requirements for an approved cancer program. Emphasis will be given to the regulatory requirements for an approved program as outlined by the Commission on Cancer (COC) of the American College of Surgeons (ACoS) and data standards set by the North American Association of Central Cancer Registries (NAACCR), Surveillance, Epidemiology, and End Results (SEER) program of the National Cancer Institute (NCI), the World Health Organization (WHO) and other organizations. Legal ethical and confidentiality issues in both the internal and external settings will be addressed. A focus will be on the relationships between a registry and other departments within a facility. Systems management, analysis, and database management will be discussed as it pertains to cancer registry management.

**HIT139-A Math for Health Care Professionals 3**
This course is designed for any student entering a healthcare profession which requires a 100- level,college freshman level math course. This course builds on basic math skills and incorporates math computation skills that are necessary in allied healthcare fields. There will be an emphasis on understanding systems of measurement and conversions: metric, apothecary, household and other systems of measurement. Basic topics include a review of fundamentals in: decimals, fractions, ratios, proportions, percents, formulas, household and metric measurement, basic algebra and word problems. Advanced topics will include: infection rate computations, other most commonly computed hospital statistics, and some managerial math such as computing FTEs in healthcare supervision & management.

**HIT250-E Coding I 3**
This course is an introduction to diagnostic and procedural coding and classification systems with the emphasis on the current version of the International Classification of Disease (ICD) coding and attention paid to the new and legacy version of the classification (both ICD-9-CM and ICD-10-CM/PCS coding systems are addressed). You will learn how to classify and index diagnoses and procedures for the purposes of standardization, retrieval, and statistical analysis. Coding conventions and inpatient coding guidelines are emphasized. Corequisites: HSC113-E, BIO165-A, HIT370-C (For non-health information majors, the corequisite of HIT370-C may be waived with instructor approval)

**HIT251-E Coding II 3**
This course is a continuation of Coding I. Emphasis is placed on advanced coding concepts and classifications of diseases and procedures utilizing ICD-10-CM and ICD-10-PCS. Encoder and grouper software will be presented and utilized. You will be working with actual medical records. Further emphasis is placed on accuracy and compliance with ICD-10-CM/PCS coding requirements. Prerequisite: HIT250-E

**HIT252-E Coding III 3**
This course is an introduction to CPT coding. You will learn how to classify procedures utilizing the CPT coding and classification system. Encoder and grouper software will be utilized. You will be working with actual medical records. Further emphasis is placed on accuracy, compliance, and outpatient coding requirements. Prerequisite: HIT251-E

**HIT253-E Oncology Coding & Staging Systems 1.5**
This course will enable the student to recognize the similarities and differences between ICD-9-CM and ICD-10-CM and is geared towards students already working with ICD-9. All types of patient encounters will be required to submit ICD-10-CM codes on claims effective October 1, 2015.

**HIT254-E ICD-10-PCS 1.5**
This course will enable the student to recognize all the root operations and coding guidelines need to accurately code procedures using ICD-10-PCS. All types of inpatient encounters will be required to submit ICD-10-PCS codes on claims effective October 1, 2015.

**HIT270-C ICD-10 Procedural Coding 2**
This course introduces students to the use of the ICD-10-PCS classification system with application of coding scenarios. ICD-10-PCS also will apply use of ICD-10-PCS coding for data collection and billing procedures. ICD-10-PCS is the procedural classification system developed by the Centers for Medicare & Medicaid Services (CMS) for use in the U.S. for inpatient hospital settings.

**HIT271-E Medical Coding I 3**
This course is an introduction to diagnostic and procedural coding and classification systems with the emphasis on the current version of the International Classification of Disease (ICD) coding and attention paid to the new and legacy version of the classification (both ICD-9-CM and ICD-10-CM/PCS coding systems are addressed). You will learn how to classify and index diagnoses and procedures for the purposes of standardization, retrieval, and statistical analysis. Coding conventions and inpatient coding guidelines are emphasized. Corequisites: HSC113-E, BIO165-A, HIT370-C (For non-health information majors, the corequisite of HIT370-C may be waived with instructor approval)

**HIT272-E Medical Coding II 3**
This course is a continuation of Coding I. Emphasis is placed on advanced coding concepts and classifications of diseases and procedures utilizing ICD-10-CM and ICD-10-PCS. Encoder and grouper software will be presented and utilized. You will be working with actual medical records. Further emphasis is placed on accuracy and compliance with ICD-10-CM/PCS coding requirements. Prerequisite: HIT271-E

**HIT273-E Medical Coding III 3**
This course is an introduction to CPT coding. You will learn how to classify procedures utilizing the CPT coding and classification system. Encoder and grouper software will be utilized. You will be working with actual medical records. Further emphasis is placed on accuracy, compliance, and outpatient coding requirements. Prerequisite: HIT272-E

**HIT290-C Reimbursement Methods 3**
During this course, you will examine reimbursement methodologies, including prospective payment systems, utilized in a variety of health care settings. You will explore data quality for optimal reimbursement, data auditing, and compliance processes. You will also be introduced to billing procedures and requirements for claims submissions. Prerequisite: HIT271-E; Recommended prerequisites or corequisites: HIT-272, HIT-273

**HIT312-E Health Informatics & Info MGMT Systems 3**
This course should enable the student to describe the different types of code sets and classification systems used in healthcare. It should also enable the student to understand the basic steps in implementing an electronic health record and using the software Access for data collection. Prerequisites: HIT120-C, HIT150-C, HIT271-C, HIT370-C, HIT380-C, HSC113-E or instructor's approval Corequisite: HIT451-C

**HIT315-C Electronic Applications for Health Data 2**
This course combines knowledge gained in a variety of Health Information Technology courses (Allied Health Statistics, Coding I, II and III, Health Records in Acute Care, etc.) and computer science courses (Introduction to Computers, Management of Information Systems, etc.). You will collect, analyze, and present healthcare data (and other data) using Microsoft software and additional software applications as available. Prerequisite: CSC110-A

**HIT370-C Health Records in Acute Care 3**
This course will introduce you to the profession of Health Information Management. Topics covered include healthcare in the U.S., professional associations, the health record and its contents, forms and forms design, record retention policies, qualitative and quantitative analysis, filing and numbering systems, and an introduction to nomenclatures and classification systems.

**HIT380-C Health Records in Alternate Setting Syst 3**
In this course, you will take a closer look at alternative care settings and their record keeping standards. Alternative care includes long-term care, home care, hospice, ambulatory care and mental health. You will also learn about healthcare facility licensing and accrediting agencies, along with government and accrediting agencies' standards and regulations. Additional topics include managing Health Information Department issues, participating in committees, and managing health information employee productivity. Prerequisite: HIT370-C

**HIT400-E Clinical Documentation Improvement 2**
This course will introduce HIM professionals to the challenge of detailed clinical documentation in the electronic health record as the healthcare industry transitions to ICD-10-CM. The course will focus on the clinical terminologies needed to assign accurate coding which avoids potential reimbursement losses. Facilitation and coordination between the medical coding department and clinicians by means of the standard physician query process will be examined. Important Note: Clinical documentation improvement (CDI) is not about how to code in ICD-10. CDI is: knowing what to look for in medical records, as well as how to ask for clarification provided by physicians.

**HIT420-C Legal Aspects of Health Information 2**
This course will cover the legal side of healthcare management. You will learn about the U.S. Court System and U.S. law in respect to healthcare issues. You will be exposed to tort law, civil procedures, trial practice, regulations for release of medical information and patient confidentiality, patient consent, and medical staff regulations. Prerequisite: HIT370-C

**HIT422-E Medico-Legal Ethics 3**
”This course is an introduction to the concepts of medical law and ethics for allied health care practitioners. Topics including criminal and civil acts, contracts, negligence, and ethical concepts as they relate to the medical profession, health information management, HIPAA, and other health care legislative rulings are discussed. Prerequisites: HIT 370: Health Records in Acute Care or HIT/END Program Director approval

**HIT430-E Quality Improvement 2**
This course has specific applications to the Health Information Management field. You will be introduced to the overall significance and various applications of quality, risk, and utilization management. Attention is also given to the significance of different management styles and their impact on subordinates' performance. Includes role playing and discussion. Prerequisite: HIT370-C

**HIT440-A Quality Management 3**
This course provides an overview of supervision and management activities in a health information department. Focus is placed on a team approach toward the achievement of both departmental and organizational goals. Students will participate in problem solving activities, committee activities and development of technical writing skills. Emphasis is placed on activities relating to planning, organizing, directing, controlling and budgeting in an HIM department. Additional topics include performance improvement monitors, utilization management, risk management principles, and QA (Quality Assurance) activities pertaining to JCAHO (Joint Commission on Accreditation of Healthcare Organizations) accreditation Survey.

**HIT451-C Allied Health Statistics 3**
Terms, definitions, and formulas used in computing healthcare statistics will be presented and utilized throughout this course. You will be instructed on how to collect, analyze, and present data in the healthcare arena including national and local registries and healthcare indexes. You will need a basic knowledge of mathematical computation. Prerequisite: 3 credit hours of mathematics

**HIT485-E Medical Billing & Reimbursement Billing 3**
This course is designed to prepare students for jobs in medical office and hospital billing departments. Comprehensive coverage of every stage of the medical insurance claim cycle will be studied in a logical sequence. Basic concepts of medical coding, detailed information on various insurance payers and plans, including Medicare, Medicaid, disability plans, private indemnity plans, and managed care plans will be presented and studied. Students will obtain hands-on experience in completion of the CMS- 1500 claim form and the UB-94 hospital claim form with step-by-step guidelines for data entry. Demonstration of current physician practice management software will be included. Additional emphasis will be placed on the security of information entered into computer databases in compliance with new Federal legislation requiring the use of electronic patient records. Prerequisites: HIT120-C, HIT150-C

**HIT541-C Professional Practice Experience II 3**
This is a supervised 150-hour professional practice in a healthcare setting. Emphasis will be placed on practical application of entry-level skills, management skills, and project organization skills acquired throughout the program. You will be required to meet written goals and objectives, undergo a work evaluation, complete a project, and submit a written report on your learning experience. Prerequisite: Successfully completed all HIT courses with a “C” or better grade.

**HIT594-C HIT Practicum A Professional Practice I 1**
This is an instructor-supervised professional practice experience. It is designed to introduce you to the daily operations and function of the health information management department. You will use newly acquired knowledge and skills through observation and interaction. You will be required to meet written goals and objectives, undergo an evaluation, and submit a written report on your learning experience. Prerequisite: HIT370-C

**HIT595-C HIT Practicum B Professional Practice II 1**
This is a supervised 40-hour professional practice experience designed to give you exposure to another healthcare setting. Practical application of acquired entry-level skills is emphasized. You will be required to meet written goals and objectives, undergo a work evaluation, and submit a written report on your learning experience. Prerequisites: HIT370-C, HIT271-E, HIT380-C

**HIT596-A HIT Practicum I 2**
This course provides supervised clinical experience in health care settings. As a distance learning student, the clinic site will be arranged for you by the instructor unless your instructor informs you otherwise. Site will be chosen based on proximity to student and availability of HIT-trained, on-site supervisor(s). Emphasis will be placed on practical application of basic concepts in the health care setting. Upon completion, student should be able to apply basic health information management theory to health care facility practices.

**HIT598-E HIT Practicum II 2**
This course provides supervised clinical experience in health care settings. As a distance learning student, the student will need to initiate first contact with their practicum site of choice located in their area. Once the student has made contact and the site has accepted the student for their practicum hours, the student will forward the contact information to their course instructor who will collaborate the practicum with the site supervisor. Students may also be assigned activities within the virtual lab software and assignments as assigned. Emphasis will be placed on practical application of advanced concepts in the health care setting. Upon completion, student should be able to apply advanced concepts such as coding, billing, quality management, and release of information activities.

**HIT946-C Seminar 1**
This is a capstone course designed to help you develop research and presentation skills, bring you up to date with current healthcare trends, and review entry-level competencies in preparation for the RHIT certification exam. This should be taken the last semester of the program.

## HEALTH SCIENCES

**HSC105-E Introduction to Health Occupations 1**
Issues and practices in the health care industry. In-depth exploration of health careers and employment expectations to assist in career development decisions.

**HSC106-A Contemporary Health Issues 3**
An exploration of areas of human health. The topics will include health, psychosocial health, chemical alteration of behavior, human sexuality, personal health care, disease, health in society and the life cycle.

**HSC111-A Issues in Health and Society 3**
This course presents an overview of current issues, concepts, and theories in health. It provides students with well-developed, carefully considered, and sharply opposed points of view on issues in health and society. This course provides both an overview of areas of conflict in health as well as ways of looking at the conflicts. The purpose of this course is to introduce a number of contemporary topics in order to illustrate how controversies are viewed from a healthcare perspective.

**HSC113-E Medical Terminology 2**
Medical terminology is the language of medicine. This course is designed to utilize word parts (prefixes, suffixes, word roots, etc.) in the construction and analysis of medical terms. The course introduces medical terms, eponyms, acronyms, and abbreviations in a structured anatomical approach. Emphasis is placed on word analysis, spelling, definition, pronunciation, and usage of medical terms.

**HSC114-E Medical Terminology 3**
This course is an individualized course which includes spelling and definitions of medical terms including word parts, human body structure, common psychiatric terms and the following body systems: integumentary, respiratory, urinary, male and female reproductive, obstetrics and neonatology, cardiovascular and lymphatic, digestive, eye, ear, musculoskeletal, nervous and endocrine systems.

**HSC143-A Pharmacology 3**
This course is designed to help nursing students, medical assistant students, and students of other allied health occupations, a continuing education update for practitioners in the health care field, part of a refresher program for practitioners returning to health occupations, and a supplemental or reference book for practitioners wishing to extend their knowledge beyond basic training in specific health occupations.

**HSC172-E Nurse Aid 3**
Emphasis in the course is on students achieving a basic level of knowledge and demonstrating skills to provide safe, effective resident care in a nursing home. It includes an overview of functions of effective nurse aides.

**HSC245-E Team Building 1**
Involves the study of team dynamics and communication techniques necessary to promote effective, collaborative team outcomes. Topics include: team characteristics, communication, goal setting, roles of team members, building teams, leadership skills, motivation, conflict resolution, and evaluating results.

## HEALTH SAFETY & ENVIRONMENT TECH

**HSE100-E Occupational Safety 3**
Students shall be able to apply the federal government's "Safety and Health Program Management Guidelines" and Title 29 of the Code of Federal Regulations in analyzing workplace hazards and in recommending compliance methods that protects the health and safety of workers.

## HEALTH SERVICES

**HSV259-A Introduction to Chemical Dependency 3**
Introduction to Chemical Dependency covers the past, current, and future trends in the chemical dependency field. Students examine the biological, sociological, and psychological theories of addiction, and visit and analyze various drug and alcohol treatment modalities/programs. Other topics include community, school, educational, and self-help prevention programs. Students learn how to present drug and alcohol education classes in addition to learning about the recovery and relapse process.

## HUMANITIES

**HUM110-A Changes and Choices 3**
Changes and Choices offers students an opportunity to explore ways in which the Humanities are integral to their personal and work lives, especially as they face change and make decisions.

**HUM137-A Humanities of the Modern World 3**
The goals of the course are for students to experience and appreciate the humanities to study the humanities in a chronological framework as reflections of the worldview of the Era and to learn how our own present culture evolved and to trace historically the growth of the value of humanism and capabilities of the individual.

**HUM220-A Mythology 3**
Provides an understanding of the role of mythology in human history throughout the world. The relationships among myth, religion, and culture are explored.

**HUM287-A Leadership Development Studies 3**
Leadership Development Studies by the Phi Theta Kappa International Honors Society is designed to provide emerging and existing leaders the opportunity to explore the concept of leadership and to develop and improve their leadership skills. The course integrates readings from the humanities, experiential exercises, films, and contemporary readings on leadership. Your PTK Certified Instructor will use a variety of learning techniques that may include, but are not limited to, integration of humanities into the study of leadership, threaded discussions, Shared-analysis of articles, self-assessment exercises, and film study. Students taking this course will gain a basic understanding of the concept of leadership theory while developing philosophy of leadership, an awareness of the moral and ethical responsibilities of leadership, and an awareness of one's own ability and style of leadership. The course provides the opportunity to develop essential skills through study, observation, and application.

## INDUSTRIAL TECHNOLOGY

**IND148-E Mechanisms 3**
The application of principles and practical problem solving involving hydraulics, pneumatics, cams, gears and gear trains, belt drives and other industrial devices. Topics include hydraulic and pneumatic theory, drive train component alignment, motion concepts and velocities. Laboratory will enhance the students' understanding.

## LEGAL

**LGL110-A Introduction to Paralegal Studies 3**
This course surveys the paralegal profession with special emphasis on the major roles and responsibilities of the legal assistant. The course explores the knowledge base required to be a legal assistant and considers the history of the profession. The last portion of the class focuses on basic legal research.

## LITERATURE

**LIT101-A Introduction to Literature 3**
This course is designed to help the student gain an understanding of and appreciation for various literary genres including short fiction, poetry, and drama.

**LIT111-A American Literature Since Mid-1800's 3**
This course provides insight into the styles, philosophies, and the themes of authors for the period from 1865 to the present time. Authors of this time period include F. Scott Fitzgerald, William Faulkner, Ernest Hemingway, and Mark Twain.

**LIT120-A American Novel 3**
This course is an overview of the American Novel. Emphasis in this course is on evaluating various authors' style and approach to plot line and characterization to develop a central theme.

**LIT130-A African American Literature 3**
This course is a survey of African American literature beginning in the 18th century and continuing into the present. Genres will include the short story, poetry, the novel, and drama. Emphasis is placed on formal, thematic, historical, cultural, and critical elements of African American literature, as well as the relationship between African American literature and the human condition.

**LIT135-A Film As Literature 3**
Film as Literature examines the motion picture as a literary form. The motion picture is compared to other narrative literature, such as the novel, the short story, the epic poem, and the memoir. Special emphasis is placed on how written narratives are adapted into motion picture narratives.

**LIT140-A British Literature 3**
A survey of British literature from its beginnings through the Restoration and Eighteenth Century, considered in the social and intellectual contexts of the periods.

**LIT141-A British Literature II 3**
British Lit II surveys modern British Literature from the Romantic Era to the present with emphasis upon the major authors of the past two centuries. Interpretive, analytical, and critical papers are assigned.

**LIT150-A World Literature I 3**
This course is a study on readings from the great books of the Western World. Prose, poetry, and drama from the Bible and Classical Times, Middle Ages, and Elizabethan Period to 1660 are also covered.

**LIT161-A The Short Story 3**
Evolution of the short story as a literary form, with emphasis on analysis and appreciation.

**LIT178-A Mythological & Biblical Literature 3**
Every culture tells stories of where we came from and who we are, as well as stories that tell us how we should act toward each other. An understanding of various world mythologies, especially Greek and Roman, and of some basic stories from the Bible, is vital for understanding and appreciating much of the world's literature and art. This class will examine these early oral stories as pieces of literature as well as how Western culture has referred to these stories.

**LIT184-A Young Adult Literature 3**
This course is designed to help adults who work with young adults (roughly ages 12–18) become more familiar with teens and their literature, and select the best literature available based upon criteria and sources that allow for the selection of the best literature for young adults. Students will be introduced to different genre of literature read by young adults. The course will, therefore, be beneficial to future teachers and librarians, but also other school personnel such as curriculum specialists and counselors as well as social workers, parents or anyone who is interested in young adults/teens.

**LIT185-A Contemporary Literature 3**
This course focuses on works written since World War II. The effects of culture, environment and mass media on literature and its four major genres (short fiction, poetry, novel, and drama) are explored in detail through critical reading and writing.

## MEDICAL ASSISTANT

**MAP141-A Medical Insurance 3**
This course introduces major types of medical insurance coverage and reimbursement. This course also emphasizes insurance terminology, procedural and diagnostic coding, and preparation of insurance claims. Includes maintenance of reimbursement and claims records.

**MAP402-E Medical Law and Ethics 2**
This course introduces principles of medical law, medical ethics, and bioethics. It will emphasize the function of law and ethical issues as it applies to the medical environment.

## MATH

**MAT044-H Mastery Math 1**
This course provides individualized instruction designed to improve the student's essential math skills so that students will be better able to succeed. This course will support the student in the program required (corequisite) math course and will also emphasize study skills as they apply to math. Students will work independently with tutors in the Learning Center on a weekly basis to supplement math abilities to enable success in their required math class.

**MAT054-H Math Strategies 3**
Developmental studies course that reviews whole numbers, integers, fractions, decimals, percents, ratios, proportions, and graphing utilizing basic algebra.

**MAT062-H Elementary Algebra 3**
This course is a one semester survey of beginning algebra. It will cover real numbers and their properties, integers, equations, inequalities, exponents, factoring, algebraic fractions, radicals and quadratic equations.

**MAT102-A Intermediate Algebra 4**
This course is designed to provide you with the basic algebra skills needed prior to the study of college algebra and trigonometry. The emphasis is on using the concept of algebraic function to model real-life situations. Different types of models including linear, quadratic, and exponential models will be presented along with the supporting algebraic skills and procedures.

**MAT104-C Applied Math Topics 3**
This course is designed to give you a thorough review of the four basic functions of addition, subtraction, multiplication, and division of whole numbers, decimals, fractions, integers, measurements and percents. Basic linear equations and basic geometric figures for perimeter, area, and volume will be covered. You are then given exercises in using these mathematical skills in special occupational applications.

**MAT106-E Elementary Algebra 3**
This course provides you with basic algebra skills. It will cover topics of linear equations and inequalities, formulas, systems of equations, quadratic equations, and factoring.

**MAT108-C Math Fundamentals 3**
This course is designed to provide you with a broad overview of mathematical concepts including operations and problem solving with fractions, decimal numbers, percents, ratio and proportion problems, measurement, linear equations, and basic geometry. Estimation and number sense are stressed throughout the course. Calculator usage is also covered.

**MAT110-A Math for Liberal Arts 3**
This course is designed to introduce you to a variety of interesting mathematics topics. Emphasis will be on problem solving and real-life applications of these topics. This course is designed for anyone seeking a two-year degree or any other student who is interested in learning a variety of mathematics topics. One year of high school algebra is recommended, but not required.

**MAT117-C Math for Elementary Teachers 3**
This course contains basic mathematical content pertinent to elementary teaching. Topics include problem solving, set theory, number systems and bases, number theory, informal geometry, measurement, and elementary probability and statistics. This course does not count toward mathematics requirements for A.A. or A.S. degree.

**MAT121-A College Algebra 4**
This course is designed to strengthen and expand your algebra skills. The emphasis is on using the concept of an algebraic function to model real-life situations. Different types of models including linear, polynomial, exponential, and logarithmic models are presented along with the supporting algebraic skills and procedures.

**MAT123-E Basic Algebra & Trigonometry 4**
The mathematical subjects of this course are developed in simple stages and are applied to the solution of practical problems. The topics of the course are a review of arithmetic, units of measurement, basic algebra, basic geometry, right triangle trigonometry, functions and graphs, simultaneous linear equations, and basic solid geometry.

**MAT124-E Algebra & Trigonometry 3**
This course is a continuation of Basic Algebra & Trigonometry. The topics of the course are trigonometric functions of any angle, vectors, exponents and radicals, the j-Operator, exponential and logarithmic functions, additional types of equations, and systems of equations. Prerequisite: MAT123-E

**MAT128-A Pre-Calculus 4**
A higher-level mathematics course intended to prepare students for calculus or advanced science courses. Topics covered include: logarithms and exponential functions, trigonometric functions, complex numbers, analytic geometry, and topics in the theory of equations. A graphing calculator is required.

**MAT129-A Precalculus 5**
An intensive course in college algebra and trigonometry. Topics include functions and their graphs, exponential and logarithmic functions, trigonometric identities and equations, sequences and series, limits, mathematical induction, the binomial theorem, permutations, and combinations, probability, and applications. Graphing, calculator, and computer use throughout. Prerequisite: MAT121

**MAT131-E Trigonometry 1**
This course provides you with a basic coverage of trigonometry including the definition of the six trigonometric functions, graphs of these functions, solving trigonometric equations, and working with trigonometric identities. Prerequisite or Corequisite: MAT121-A or an equivalent Algebra course

**MAT140-A Finite Math 3**
This course is designed to provide you with skills in finite mathematics. Topics covered will include linear equations, matrices, linear programming, sets and counting, probability and statistics, and finance. Many types of applications will be presented throughout the course. This math course is appropriate for any first or second year college student and is especially useful for those students majoring in business or in the social or biological sciences.

**MAT150-A Discrete Math 3**
This course is designed to introduce you to topics and concepts in discrete mathematics. Discrete mathematics is that part of mathematics dealing with finite—but often large —sets of objects. Discrete mathematics is to be contrasted with 'continuous' mathematics, for example the classical theory of calculus. Its rise in popularity coincides with the rise of the computer. Topics covered in this class will include logic and methods of proof, sets, relations, functions, recursion, induction, and counting principles.

**MAT156-A Statistics 3**
This course is designed to provide you with a foundation of statistical concepts and procedures that can aid the student as both a consumer and producer of statistical information. The emphasis is on the process of statistical investigation including collecting data and study design, descriptive statistics, probability and inference.

**MAT165-A Business Calculus 3**
Business Calculus with Applications is designed for students in business, social sciences, and life sciences. Topics covered in this course are limits, derivatives, and applications of the derivative related to business, social science, and the life sciences, integration, and applications of the integral to business, social science, and the life sciences. A graphing calculator is required.

**MAT210-A Calculus I 4**
This course is designed to provide you with a basic knowledge of calculus. Topics covered include the notion of limit, the derivative, and the integral as well as practical applications of these concepts. Topics will be approached from numerical, graphical, and analytical standpoints. Prerequisite: MAT121-A and MAT131-E or an equivalent Precalculus course

**MAT211-A Calculus I 5**
A review of analytic geometry and functions a study of limits, continuity, differentiation, and integration. Emphasis on theory, applications, and computer use throughout. Prerequisite: MAT121-A

**MAT216-A Calculus II 4**
The study of calculus is expanded in this course to include more advanced topics. Topics include applications of integration, techniques of integration, infinite series, analytic geometry, and polar coordinates. The emphasis of the course will be on problem solving techniques and theory. Prerequisite: MAT210-A or an equivalent Calculus I course

**MAT219-A Calculus III 4**
A continuation of Calculus II, this is the final course in the series. Topics include solid analytic geometry, moments, partial derivatives, multiple integrals, and vector analysis. A graphing calculator is required. Prerequisite: MAT216-A

**MAT227-A Differential Equations 4**
Elementary Differential Equations and Laplace Transform covers elementary theory and applications of ordinary differential equations, matrices and solutions of linear equations, Eigenvalue methods for systems of linear differential equations Laplace transforms and series solutions. Prerequisite: MAT216-A

**MAT772-C Applied Math 3**
This course is designed to acquaint the student with the mathematics necessary to function within technical careers and to become a more aware consumer. Topics include: review of arithmetic operations, measurement, metric system, fundamentals of geometry, introductory statistics and probability, graphs and elementary algebra concepts with emphasis on applications.

## MANUFACTURING TECHNOLOGY

**MFG121-C Machine Trade Print Reading I 2**
A beginning and intermediate blueprint reading course covering basic visualization of shapes and sizes and freehand sketching of objects. Includes section lining, print alterations and projections.

**MFG122-E Machine Trade Printreading I 3**
This basic course begins with terminology, abbreviations, and the alphabet of lines. Interpretations of drawings progresses from single-view drawings to multi-view projections. Orthographic projection and pictorial interpretation is facilitated through visualization exercises. Dimensioning methods and their effect on tolerance accumulation is also studied. Surface texture symbols, welding symbols, casting drawings, sectional views, steel specifications, thread specifications, drawing revisions, metric drawings, and computer-aided drawings are introduced.

**MFG123-E Product Design & Development I 2**
Product Design & Development I is designed to introduce students to the integrated, information-driven approach to all aspects of a product's life, from the design through manufacture, deployment, and maintenance with the culmination of the product's removal from service and final disposal. During the course, students will have the opportunity to participate in transforming a designer's idea into a marketable product during a mock corporate activity. The primary emphasis of the course is placed on an understanding of the major activities of research and development, production, marketing, financial affairs, and industrial relations along with the entrepreneurial spirit required to succeed in today's global market-place. This is the first course in a two-course sequence.

**MFG124-E Product Design & Development II 2**
Product Design & Development II is a continuation of MFG123 and is designed to more fully introduce students to the integrated, information-driven approach to all aspects of a product's life, from the design through manufacture, deployment, and maintenance with the culmination of the product's removal from service and final disposal. During the course, students will have the opportunity to participate in transforming a designer's idea into a marketable product during a mock corporate activity. The primary emphasis of the course is placed on an understanding of the major activities of research and development, production, marketing, financial affairs, and industrial relations along with the entrepreneurial spirit required to succeed in today's global market-place. Prerequisite: MFG123.

**MFG146-C Automated Manufacturing Systems 3**
Through the utilization of simulation software and hands-on equipment, students will develop advanced programs for multi-axis robotic arms. Students will use human mechanical interface programs, vision systems and industrial conveyor systems to mass produce various objects.

**MFG150-C Applied Math for Manufacturing 2**
The topics of this course are developed in simple stages and are applied to the solution of practical problems. The topics of the course are a review of algebra, units of measurement, basic geometry, trigonometry and quadratic equations.

**MFG185-E OSHA/Shop Safety 2**
This course is designed to enable students to earn their OSHA 10 rating and provide the basic shop safety practices. The course will include welding, machine, and general shop safety standards and practices. How to assess potential hazards and correct them along with what to do in case of an accident will be covered.

**MFG191-C Manufacturing Processes 5**
This course is designed to give the student a basic understanding of machine practices and processes. Topics of discussion will include machine tools, measuring tools, bench tools, drills and saws, grinding, lathes and mills. Other topics will include the types and characteristics of materials, machinability and heat-treating. Students will spend most of their time in the lab performing hands-on projects. Corequisites: MFG122-E

**MFG194-E Inspection Processes 2**
This course is designed to provide the necessary knowledge required to be able to perform inspection processes on a variety of mechanical components. The course will implement a number of different inspection tools and methods utilized by industry in the inspection of mechanical parts. Measurements will be taken from mechanical parts and compared with the dimensional callouts on the blueprints. Prerequisite: MFG122-E

**MFG220-C Design Technology Final Design Project 3**
In this capstone course, students will have an opportunity to work in groups to research, design, and develop a product, piece of machinery or process utilizing the skills learned through previous course work. Students will manage the project from start to finish which includes design, ordering components, building, testing prototypes to the final product.

**MFG221-E CNC Milling Operator 2**
This course will introduce students to Computer Numeric Control (CNC) milling centers in the manufacturing setting. Various projects will strengthen the student's proper use and troubleshooting of this equipment.

**MFG256-C Introduction to Lathe Operations 2**
This course will introduce the student to the function and application of the engine lathe. Students will learn to use the engine lathe in turning, drilling, reaming, and thread cutting applications.

**MFG263-E CNC Mill Programming and Setup 3**
This course will cover the topics of G & M code programming, set-up, and operation of vertical milling machines. Theory in tool selection, fixtures and speeds and feeds will be applied. In this hands on course students will use previous knowledge of print reading and manufacturing processes to machine parts to accurate tolerances. Prerequisites: MFG122-E, MFG191-C

**MFG264-E CNC Lathe Programming and Setup 3**
This course will cover the topics of G & M code programming, set-up, and operation of slant bed lathes. Theory in tool selection and speeds and feeds will be applied. In this hands-on course students will use previous knowledge of print reading and manufacturing processes to machine parts to accurate tolerances. Prerequisites: MFG122-E, MFG191-C

**MFG325-E CAM I 3**
This course will provide you with hands-on experience with various computer software programs used by the manufacturing industry. The student will draw and create tool paths for projects using CAM (Computer-Aided Manufacturing) and CAD (Computer-Aided Drafting) software. These projects will be machined using CNC (Computer Numeric Control) machines. The course will cover both vertical mills and lathes. Prerequisite: MFG191-E

**MFG429-C Tooling Design and Build 4**
This course will cover theory and application of mechanical components used in the design of industrial tooling. This course students will gain hands-on experience by working in teams to design and build a specialized piece of machinery. Prerequisites: CAD246-C, MFG263-E, MFG264-E, Math elective

**MFG455-E Industrial Plastic and Injection Molding 4**
This course will cover theory and application of industrial plastics. In this course students will gain hands-on experience by working in teams to design and build a plastic injection mold to produce accurate and stable products. Prerequisites: CAD246-C, MFG263-E, MFG264-E, Math Elective

**MFG548-E Fluid Power 3**
This course is designed to introduce you to fluid power concepts and at the same time to show how they relate to other familiar phenomena. The course points out the typical components which may be encountered in a fluid power system. It describes the construction of each component, the proper application, and how each works. The course has been divided into three segments: Segment 1, Hydraulics Segment 2, Pneumatics and Segment 3, Troubleshooting.

# MANAGEMENT

**MGT101-A Principles of Management 3**
This course provides a broad perspective of the scope and view of the management field. Studies will include the management functions of planning, organizing, staffing, directing, and controlling.

**MGT110-A Small Business Management 3**
This course provides you with a thorough coverage of small business operation with a balance between business functions (purchasing, production, sales, and finance) and the management function (planning, organizing, actuating, and controlling). It stresses concepts and principles that are utilized in successful small business operations. This course is taught with an entrepreneurial emphasis.

**MGT125-A Performance Appraisal 3**
The primary focus in this course is that of evaluating employee performance and improving employee performance through appropriate, effective, and legal evaluation processes. Topics covered in this course include linking performance evaluation systems to pay, promotion, development, and training.

**MGT130-A Principles of Supervision 3**
This course focuses on the supervisor's role encouraging members of a work unit to contribute positively toward achieving the organization's goals and objectives. Particular emphasis is given to the significant role that leadership plays at all levels of organizations. This emphasis will consider the different styles of leadership, as well as developing leadership skills, and concluding with ethical leadership.

**MGT151-A Management Communication I 3**
A writing course that prepares the student for the types of written communication essential to management and supervision success

**MGT165-A Principles of Quality 3**
This course is designed to assist the student in acquiring the knowledge to create and develop successful teams in the workplace. The team concept has proven to be successful in improving productivity, quality, customer satisfaction, and coworker morale. It has also reduced labor costs and helped organizations operate more lean and efficiently. The challenge can be transforming the workforce from individuals, into a successful team. We will also cover the principles of and success factors for Quality Improvement that focus on the skills, and knowledge needed to lead quality improvement within a work group. Philosophies, concepts, and improvement actions pertaining to quality will be covered in detail. Standards and Certification programs will be discussed, and class members will prepare a Quality Improvement Plan for their work groups.

**MGT170-A Human Resource Management 3**
This is an introductory course which includes an overview of the human resources aspect of an organization. This course covers the major duties performed by the human resources department including recruiting, selection, hiring, motivation, training and development, performance appraisal, compensation and benefits, the influence of collective bargaining, as well as safety issues in the workplace.

**MGT174-A Training and Employee Development 3**
This course helps students understand the process of developing human resources, providing a thorough analysis of training as it relates to organizational objectives and strategies. It emphasizes the conceptual and practical value of developing training programs, with practical examples provided for both large and small organizations.

**MGT177-A Staffing 3**
This course is based on a comprehensive staffing model that focuses on how to achieve a successful person/job and person/organization match. Components of the model include external influences (economic conditions, labor markets, unions, laws and regulations), staffing support systems (staffing strategy, planning, job analysis, and measurement), major staffing activities, (recruitment, selection, employment), and staffing system management.

**MGT178-A Employment Law 3**
Initial emphasis is on the principles of business law as it pertains to the human resource function. The course covers laws applicable to selection, testing, hiring, firing, personnel policies and procedures. Also included in the courses is the introduction to the Civil Rights Act and related discrimination issues. The Occupational Safety and Health Act, Family and Medical Leave Act, and workers compensation topics are discussed as they relate to the business environment.

**MGT190-A Employee Compensation & Benefits 3**
This course focuses on monitoring and organizational benefits such as health, dental, FMLA, wage continuation, workers compensation and retirement programs. Students will be introduced to a market survey compensation philosophy and will also learn and practice the tools needed to implement this philosophy. The Manpower Planning Process will also be introduced with discussion of the need and importance of conducting this new survey.

**MGT191-A Compensation Management 3**
The theory, practice, and research into the various approaches of employee compensation are covered. This course looks at employee compensation from the perspective of both the employee and the employer, as well as how compensation and costs are evaluated. The course also includes a component of appropriate compensation styles as they relate to industry type and various organizational cultures and structures.

**MGT210-A Management Decision-Making 3**
This course is a capstone course. It cuts across the whole spectrum of business and management. The center of attention is the total enterprise - the industry and competitive environment in which it operates its long-term direction and strategy its resources and competitive capabilities and its prospects for success.

## MARKETING

**MKT110-A Principles of Marketing 3**
This is your introduction into the fascinating world of marketing. You will learn about basic marketing functions, the marketing mix (product, price, promotion, and distribution), and the marketing practices of both large and small organizations, profit and non-profit.

**MKT121-E Digital Marketing 3**
A complete overview of how to promote a business online, this course covers the basics of traditional marketing before going on to explore how these core concepts can be specifically applied to digital media. Students will learn the role that websites, social media, search engine placement, email and mobile marketing play in their overall marketing strategy and how best to take advantage of each.

**MKT140-A Principles of Selling 3**
You will learn the basic fundamentals of selling. The significant role of selling in our economy will be stressed. Effective methods and procedures dealing with how to sell ethically and how to build a long-term relationship with customers will be covered.

**MKT150-E Principles of Advertising 3**
Advertising reflects the promotional element of the advertising mix. Topics include personal selling, public relations and advertising. Students explore budgeting, media, promotional mix selection, market analysis, and evaluation of effectiveness.

**MKT160-A Principles of Retailing 3**
This is a course dealing with the principles and practices which are common to retailers. Examples of topics covered are the development of retailing, types of retailers, developing pricing policies, budgeting, inventory control, promotion ideas, and expense control.

**MKT181-A Customer Service Strategies 2**
This course is designed to introduce students to the concepts of customer service as well as help them learn the skills and techniques necessary to provide excellent service to both internal and external customers. These skills are critical since identifying and satisfying customers needs are an essential part of every business organization.

**MKT190-A International Marketing 3**
You will be introduced to concepts unique to the field of international marketing and compare this field with domestic marketing practices. Topics explored include access to international markets, the forms of international business, trade barriers, threats, weaknesses, and opportunities in international markets. Cultural differences, political factors, and the legal environment of the international market are also covered.

# MEDICAL LAB TECHNOLOGY

**MLT101-E Introduction to Lab Science 2**
This course familiarizes the student with the MLT program and the field of laboratory medicine. The organization and role of the clinical laboratory are explored, as well as medical ethics and conduct, employment opportunities, and professional organizations.

**MLT103-E Lab Mathematics 3**
Mathematical calculations applicable to the clinical laboratory are studied in this course. Emphasis is on the Metric System and calculations involved in the preparation of laboratory solutions and dilutions.

**MLT110-E Fundamental Lab Techniques 3**
This course is directed toward developing the knowledge and technical skill necessary to perform basic laboratory tests. Emphasis is placed on use and maintenance of laboratory equipment, quality control, and safety techniques.

**MLT120-E Urinalysis 3**
This course includes the study of urine formation and methodology determining the physical, chemical, and microscopic properties of urine in normal and abnormal states.

**MLT130-E Hematology 3**
Hematology is the study of the formed elements of the blood: red blood cells, white blood cells, and platelets. Development and characteristics of these, methods of measurement, and abnormalities are covered.

**MLT230-E Advanced Hematology 3**
This advanced course is a sequel to Hematology I, and includes an in-depth study of various anemias, leukemias, and other hematologic disorders.

**MLT233-E Hemostasis and Thrombosis 2**
This course emphasizes the mechanism by which the body prevents loss of blood from the vascular system. There is a focus on chemical responses of blood vessels, platelet activation and biochemical reactions that lead to clot formation and dissolution. Students learn to perform the tests used to detect coagulation deficiencies and abnormalities.

**MLT240-E Clinical Chemistry I 7**
The student will learn the analytical techniques for precise measurement of chemical constituents of the blood and other body fluids. Clinical correlation of test results with states of health and disease will also be covered.

**MLT250-E Clinical Microbiology 4**
The emphasis in this course is on bacteria of medical importance, with respect to their cultivation, isolation, identification, and pathogenicity. The student learns techniques of specimen collection, media preparation, culture, staining, biochemical testing, and antibiotic susceptibility testing. Mycology and virology are introduced.

**MLT252-E Parasitology 1**
This course includes a study of medically important human parasites with respect to life cycle, pathogenicity, and laboratory identification.

**MLT260-E Immunohematology 4**
Blood grouping, typing, antibody screening and identification, and compatibility testing are covered, along with an overview of hemolytic disease of the newborn, processing of donor blood, and blood component therapy.

**MLT270-E Immunology and Serology 2**
In this course, the focus is on the reactions of the body's immune system to foreign substances. There is emphasis on reactions between antigens and antibodies and students will learn to detect diseases such as syphilis, infectious mononucleosis, rheumatic fever and others.

**MLT283-E Clinical Practicum: Urinalysis 1**
This course is a continuation of Urinalysis I and is designed to provide the student with clinical experience in the performance of routine urinalysis. Comparison of methodology with that covered in Urinalysis I is stressed.

**MLT284-E Clinical Practicum: Immunohematology 2**
This course is a continuation of Immunohematology I and is designed to provide the student with clinical experience in specimen collection and performance of immunohematologic tests. Comparison and contrast with methodology of Immunohematology I is stressed.

**MLT285-E Clinical Practicum: Chemistry 4**
This course is a continuation of Clinical Chemistry I and is designed to provide the student with clinical experience in specimen collection and performance of clinical chemistry tests. Comparison and contrast with methodology of Clinical Chemistry I is stressed and there is emphasis on use of automatic equipment.

**MLT286-E Clinical Practicum-Immunology & Serology 1**
This course is a continuation of Immunology and Serology I and is designed to provide the student with clinical experience in the performance of serologic testing. There is emphasis on the comparison and contrast of methodology with Immunology and Serology I.

**MLT287-E Clinical Practicum: Hematology 4**
This course is a continuation of Hematology I and Advanced Hematology. It is designed to provide the student with clinical experience in specimen collection and performance of routine hematology and coagulation tests. Comparison and contrast with methodologies of Hematology I and Advanced Hematology is stressed and experience with automation is provided.

**MLT288-E Clinical Practicum: Microbiology 4**
This course is a continuation of Clinical Microbiology I and Parasitology. It is designed to provide the student with experience in bacteriologic, mycotic and parasitologic studies in a clinical setting. Practices and procedure of Clinical Microbiology I are compared and contrasted with clinical practice.

**MLT291-E Lab Survey and Review 1**
This course is designed to give the student an opportunity, at the end of the clinical practicum, to review all departments of the laboratory. Class time is provided for review of didactic materials and preparation for the comprehensive examination. Clinic time is provided for review or additional experience in any or all departments of the laboratory.

## MASS MEDIA STUDIES

**MMS101-A Mass Media 3**
An introductory course that studies mass media and society. The class includes a historical and contemporary overview of industries, professions, processes and social effects of the mass media.

## GENERAL MUSIC

**MUS100-A Music Appreciation 3**
This course provides you with the opportunity to become a more knowledgeable and more creative listener. It provides insight into the origins of the various types of music selections from the Renaissance period through the twentieth century. It includes an opportunity to listen to a cross section of musical selections throughout the course.

**MUS102-A Music Fundamentals 3**
This course is an introduction to basic music elements including notation, rhythm, scales, and elementary triadic structures. It is designed for non-music majors with limited background in music.

**MUS200-A Music History I 3**
This course is a survey of Western music literature through perceptive listening of significant forms and styles of music of Western civilization, from antiquity to the mid 18th century. Emphasis on the compositional and stylistic evolution of Western Music as evidenced in the works of selected pivotal composers.

**MUS201-A Music History II 3**
This course studies music history starting at 1750. This is part of a two-semester survey course. This course will cover the broad issues and developments in Western musical history from the pre-classical period through the twentieth century.

**MUS202-A World Music 3**
A study of traditional music from the world's cultures, combining elements of the arts, humanities, and social sciences. The purpose and function of music within each society will be studied, along with the instruments of each culture. The emphasis will be on experiencing and appreciating the music through video, audio, and live performances. Music from the following selected cultures will be studied: Native America, Africa, India, Asia, Latin American, and the Arab world.

**MUS204-A History of Rock and Roll 3**
A study of Rock and Roll from the mid 1950s to the present. Designed to create critical listeners of popular culture music through analysis of song forms, rock band instrumentation, and the political, cultural, and social significance of song lyrics.

**MUS205-A Jazz History & Appreciation 3**
Studies the elements and history of jazz music with concentration on critical listening skills. Includes a review of jazz history, styles, genres, form and content, composers, and social and historical events of the past and present that influence music selections.

## COMPUTER NETWORKING

**NET114-E Foundation of Information Technology 3**
This course is designed as an introduction to the general uses, concepts, application and implementation of information technology within business and industry. Topics include programming logic, number systems, basic hardware design and software concepts. Some hands-on experience will consist of working with hardware, operating systems and networking.

**NET142-E Network Essentials 3**
Introduces the networking field. The course focuses on network terminology and protocols, local area networks (LANs), wide-area networks (WANs), Open System Interconnection (OSI) models, cabling, cabling tools, routers, switches, Ethernet, Internet Protocol (IP) addressing, and network standards. Instruction and training are provided in the proper care, maintenance, and use of networking software, tools, and equipment and all local, state, and federal safety, building, and environmental codes and regulations.

**NET155-C Introduction to Wireless Networks 3**
This course provides a hands-on guide to planning, designing, installing and configuring wireless LANs that prepares students for the Certified Wireless Network Administrator (CWNA) certification. The course provides an in-depth coverage of wireless networks with extensive coverage of IEEE 802.11b/a/g/pre-n implementation, design, security, and troubleshooting. The lecture is reinforced with hands-on projects.

**NET167-E Computer Systems and Troubleshooting 4**
This course presents an in-depth exposure to computer hardware and operating systems. Students learn the functionality of hardware and software components as well as suggested best practices in maintenance and safety issues. Through hands-on activities and labs, students learn how to assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems. An introduction to networking is included. This course helps students prepare for CompTIA's A+ certification.

**NET225-C Routing & Switching Essentials 3**
This course describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, virtual LANS, and inter-VLAN routing in both IPv4 and IPv6 networks.

**NET261-C Virtualization-Cloud Operation 3**
This course provides students the opportunity to attack computer networks to test their defenses and teaches them how to analyze attacks. Topics include attacks and attack analysis, intrusion detection and analysis and advanced defense countermeasure configuration using firewalls, routers and intrusion detection systems.

**NET303-E Windows Workstation Operating Systems 3**
This course prepares the student for supporting and using Windows Operating System Platform in a business setting. Topics of this course include installation, administration of resources, troubleshooting, networking, optimization and security.

**NET305-E Introduction to Network Operating System 3**
This course is designed to give students of varying experience a practical working knowledge of baseline IT skills and technologies. We will gain hands-on experience with Windows Server 2016. Topics include: installation, administration of resources, troubleshooting, networking, optimization and security.

**NET313-C Windows Server 3**
This course is designed to give students a practical understanding of Windows Servers. Students will learn to plan, install, configure, manage, and troubleshoot windows servers using hands-on labs as well as group and individual projects. Topics covered include installing and configuring the server operating systems, setting up hardware, configuring system resources, optimizing system performance, configuring server storage, configuring network connectivity, and implementing server security. This course may be taken more than once provided the server operating system being offered has changed.

**NET601-E LAN & WAN Network Fundamentals 3**
In this course you will gain a comprehensive understanding of all aspects of computer networking. Through a combination of step-by-step, hands-on experience and assigned studies, you will learn about the operation of Ethernet, network media, physical topology, network design, troubleshooting, and hardware devices including: hubs, switches, routers, and physical topology. You will also gain knowledge about TCP/IP protocols, routing protocols, network operating systems and protocols such as FTP, Telnet, email, and client/server applications.

**NET602-E Desktop Operating Systems 3**
In this course you will examine hardware, software, GUI interfaces, file systems and other features of the most prominent desktop operating systems in parallel by completing a myriad of hands-on activities that reinforce the similarities between the operating systems for each task. During your learning you will gain experience with Microsoft, Sun and VMWare virtualization.

**NET603-E Wireless & Mobile Implementation 3**
This course provides you with the necessary knowledge and hands-on skills needed to work with wireless technology in a network administration environment. You will learn fundamental wireless LAN topics such as planning, designing, installing, securing, and configuring wireless LANs. You will also develop a practical understanding of common wireless LAN uses including maintenance, and business applications. The course is intended to prepare you for real-world wireless networking.

**NET605-E Network Server Admin & Security 3**
In this course you will encounter a wealth of hands-on activities that will help you develop the skills necessary to manage a network server. Your learning will include server deployment and maintenance, advanced file services, remote access, network access protection, group and user policy, directory services, DNS, and DHCP.

**NET606-E Security Analysis and Network Threat Test 3**
In this course you will experience a broad base of topics in advanced penetration testing and information security analysis. You will perform the intensive assessments required to effectively identify and mitigate risks to the security of the organization's infrastructure. Topics in this course include: the need for security analysis, TCP/IP packet analysis, advanced sniffing techniques, vulnerability analysis with Nessus, designing a DMZ Snort analysis, log analysis, denial of service, password cracking, application, and database penetration testing, virus and trojan detection, log management, penetration testing, file integrity, checking data leakage penetration testing.

**NET608-E Penetration Testing Methodologies 3**
In this course you will experience a broad base of topics in advanced penetration testing and information security analysis. You will perform the intensive assessments required to effectively identify and mitigate risks to the security of the organization's infrastructure. Topics in this course include: penetration testing methodologies, customers and legal agreements, duties of a licensed penetration tester, penetration testing planning and scheduling, pre-penetration testing, checklist information gathering and social engineering, penetration testing vulnerability analysis, external penetration testing, internal network penetration testing, deliverables and conclusion, report documentation, writing and report analysis, post testing actions, advanced exploits and tools.

**NET612-E Fundamentals of Network Security 3**
This course provides the student with an overview of Information Technology (IT) Security and introduces the components necessary to secure network information systems. Topics include: security policies, intrusion detection systems (IDS), firewalls, operating system security and network security basics. Students will also be introduced to current hacker techniques and log auditing processes. Current computer security issues will also be explored as class projects. Prerequisite: NET142-E

**NET619-C Network Attacks: Detection, Analysis & C 3**
This course provides students the opportunity to attack computer networks to test their defenses and teaches them how to analyze attacks. Topics include: attacks and attack analysis, intrusion detection and analysis and advanced defense countermeasure configuration using firewalls, routers and intrusion detection systems.

**NET621-E Network Security Analysis 3**
In this course, students will learn the duties of a cybersecurity analyst. Students are introduced to tools and tactics to manage cybersecurity risks, identify various types of common threats, evaluate the organization's security, collect and analyze cybersecurity intelligence, and handle incidents as they occur. This course prepares students for the Comptia CySA+ exam.

**NET637-E Network Intrusion Investigation 3**
This course enables students to use penetration-testing tools and techniques that ethical hackers and security testers utilize to protect computer networks. Skills and techniques include footprinting, social engineering, port scanning, enumeration, and cryptography. This course incorporates a lab component in which students practice skills designed to secure network connections and prevent attacks.

**NET785-E Fundamentals of Desktop Support 3**
This course will introduce the student to the service concepts, skill sets, career paths, and operations of the help desk industry. Students will master the role of a help desk analysis, navigate the help desk environment, and learn crucial problem solving skills. Through this course students will develop the "soft skills" and the "self-management skills" needed to deliver excellent customer support at the help desk. This course provides an overview of the help desk for individuals interested in pursuing a career in technical support. The course will integrate strong real-world computer support examples, case studies, and group/team exercises to emphasize the concepts of the course.

**NET860-C Information Technology Specialist Capstone 3**
This capstone course is designed to allow the student to review, analyze and integrate the work the student has completed toward a degree in Information Technology. The student will complete an approved academic project and paper that demonstrates mastery of their program of study in a meaningful culmination of their learning, and assesses their level of mastery of the stated outcomes of their degree requirements.

**NET932-C Internship 3**
This course provides students with the opportunity to gain practical work experience, while applying skills and techniques learned in their program of study, under the supervision of an employer, manager, or supervisor.

# PHYSICAL EDUCATION

**PEA102-E Aerobic Fitness I 1**
Aerobic Fitness I consists of a fundamental physical fitness program for students based upon principles of aerobic fitness. It improves both cardiovascular fitness and overall body condition and has individualized workouts to meet desired goals.

**PEA187-E Weight Training I 1**
Weight Training I provides fundamental instruction in the performance of weight training exercises. Emphasis centers on safety, program prescription, muscular movement, and progressive resistance training.

**PEC101-A Introduction to Coaching 3**
Introduction to Coaching consists of a four-part course that includes coaching theory, sports medicine, sports psychology, and sports physiology. It leads to coaching authorization for the State of Iowa as a junior high or senior high coach.

**PEC108-A Sports and Society 3**
Explores pervasive appeal of sports in American society. Interrelationships among sport, behavior, culture, and social institutions of business, religion, politics, education, and family will be examined.

**PEC110-A Coaching Ethics, Techniques and Theory 1**
Studies the theory and techniques of coaching the interscholastic athlete and the interscholastic team, as well as the related responsibilities, duties, and problems. This is one of four courses leading to the coaching authorization issued by the Iowa Department of Education as a head coach or assistant coach of any interscholastic athletic activity. Completion of this course after July 2000 fulfills the Iowa State coaching endorsement ethics requirement.

**PEC115-A Athletic Development and Human Growth 1**
Introduces concepts in sports psychology for Physical, psychological, and social growth will be examined as they relate to physical activity and competitive athletics. This is one of four courses leading to the coaching authorization issued by the Iowa Department of Education as a head coach or assistant coach of any interscholastic athletic activity.

**PEC120-A Body Structure and Function 1**
An introduction to the physiological processes and anatomical features of the human body which are related to and affected by physical activity and training. This is one of four courses leading to the coaching authorization issued by the Iowa Department of Education as a head coach or assistant coach of any interscholastic athletic activities.

**PEC126-A Athletic Injury Prevention 2**
Introduces conditioning programs and training methods that tend to prevent athletic injuries. Provides basic skills in injury procedures, while providing practical experience in taping techniques. This is one of four courses leading to the coaching authorization issued by the Iowa Department of Education as a head coach or assistant coach of any interscholastic athletic activity.

**PEH102-A Health 3**
Health provides an overview of selected areas related to promoting one's physical well being and general health. It surveys the role of healthy lifestyles in the physical, emotional, sexual, and spiritual dimensions of humans.

**PEH109-A Personal Wellness 1**
The objective of this course is to teach students the basic principles of exercise. Both theory and practice. concepts included in this course: pre-exercise evaluation, cardiovascular fitness, practical training techniques, various exercise programs and post evaluation.

**PEH111-A Personal Wellness 3**
Personal Wellness is designed to introduce students to all aspects of a healthy lifestyle. Key wellness topics will be presented with focus areas on appropriate exercise, heart health, body composition, nutrition, emotional health, and risk factors to a healthy lifestyle.

**PEH115-A Wellness Education 3**
Wellness Education uses a classroom approach to fitness and wellness with an activity component. Classroom topics will include: the foundations of physical fitness and exercise, special exercise considerations, developing and maintaining healthy lifestyles, and planning for lifetime fitness and healthful living.

**PEH120-A Principles of Personal Training I 3**
This course is designed to introduce the field of personal training. Basic exercise assessment and prescription concepts will be used to discuss and demonstrate safe and appropriate fitness programs with an emphasis on preparing students for taking a nationally recognized certification exam.

**PEH122-A Principles of Personal Training II 3**
This course is a continuation of Principles of Personal Training I.

**PEH255-A Principles of Sports Management 3**
Introductory course that presents business principles and procedures as applied to physical education, intramural and recreational sports programs, and school and professional sports programs.

## PHILOSOPHY

**PHI101-A Introduction to Philosophy 3**
This course provides a brief survey of the development of philosophical thinking. Writings of noted philosophers will be reviewed. In addition, time will be spent on concepts pertinent to self autonomy, the nature of man, senses and reality, freedom and choice, laws, and conscience.

**PHI105-A Introduction to Ethics 3**
This course provides you with the opportunity to further develop objective thinking skills. A variety of ethical issues will be explored, providing you with the opportunity to further examine and develop your own personal moral principles. Areas of potential conflict with respect to application to present day society will be examined.

**PHI111-A Basic Reasoning 3**
This course is an introduction to the art of thinking as applied to critical evaluation of information, the construction and evaluation of deductive and inductive arguments, solving practical and intellectual problems, and the rational and persuasive defense of ideas.

**PHI142-A Ethics in Business 3**
Ethics in Business addresses moral issues that confront the contemporary business community. Traditional ethical systems provide a framework with which to analyze issues in areas of corporate responsibility and the rights and obligations of employers and employees.

## PHARMACY TECHNICIAN

**PHR105-E Introduction to Pharmacy Technician 3**
This course is designed to provide the student with basic knowledge about community and institutional pharmacy practice. Topics include: Orientation of Technician duties, Medical Terminology, Introduction to Institutional Pharmacy Practice, Introduction to Community/Ambulatory Pharmacy Practice and Pharmacy Calculations. Students taking this course should have basic reading comprehension skills and high school algebra.

**PHR120-E Pharmacology for Pharmacy Technician 3**
This course is designed to introduce the student to the basic concept of pharmacology as well as the biological factors affecting the actions of drugs for each pharmacological classification. This course is designed for the pharmacy technician and is the second of three courses in the Pharmacy Technician Certificate program. The course is also appropriate to update the knowledge of health care professionals who participate in the delivery of medications in a variety of settings. Prerequisite: PHR105-E

**PHR941-E Pharmacy Technician Practicum 1**
This course will expose the student to the pharmacy environment. It will give the student hands on experience with the computer skills required to fill prescriptions in a pharmacy setting. It will expose the students to the equipment normally found in the pharmacy. The student will learn how to correctly measure and weigh out pharmaceutical ingredients used in extemporaneously compounding prescriptions using pharmacy graduates and Class A and electronic balances. They will use their knowledge of pharmacy math in making calculations to assist in these procedures. The student will use the pharmacy lab to simulate the prescription filling process. They will receive the prescription from a patient, input the information into the computer, pull the drugs from the inventory, count or measure the ingredients and label the container. They will become familiar with the reference materials available in a pharmacy and how to use them to obtain various drug information. Then after completing the lab work successfully, they will spend 40 hours in a community or institutional pharmacy, completing a check-list of duties that are normally performed by a technician.

## PHYSICAL SCIENCE

**PHS110-A Introduction to Physical Science 3**
Physical Science is an introductory course intended for non-science majors in which the five areas of physical science are explored: physics, chemistry, astronomy, geology, and meteorology. Descriptions and explanations of present-day knowledge are presented for all five areas. Corequisite: PHS111-A

**PHS111-A Introduction to Physical Science Lab 1**
This course shall accompany PHS110-A; Corequisite: PHS110-A

**PHS113-A Introduction to Physical Science 4**
This is a one semester survey of the basic concepts of astronomy and physics. This course is recommended for students who have not had high school physics.

**PHS120-A Exploring Physical Science 4**
A combined lecture and lab course. Topics covered come from physics, astronomy, chemistry, geology, and meteorology. Online laboratory included.

**PHS142-A Principles of Astronomy 3**
This is a course that introduces you to solar system astronomy. Emphasis will be placed on the historical development of astronomy, the solar system, stars, galaxies, and instruments and techniques used in astronomical observation. Optional corequisite: PHS143-A

**PHS166-A Meteorology: Weather and Climate 4**
An introduction to meteorology. The makeup of Earth's atmosphere, the elements of weather, weather maps, weather forecasting, storms and the effect of weather on the individual are covered. This course satisfies a general education requirement in the Natural Sciences Area. 3cr lecture 1 cr lab

**PHS172-A Physical Geology 4**
A survey course in physical geology, including the earth's dynamic systems, weathering of rocks, erosion processes, the theory of plate tectonics, volcanism, evolution of ocean basins, and resources and environmental problems.

**PHS185-A Introduction to Earth Science 3**
This course is the study of physical elements and processes that make up the environment. Students learn how the Earth functions as one closed system with the hydrosphere, lithosphere, biosphere, and atmosphere interacting to form daily patterns in life. Various Earth processes are discussed: heating and pressure of air, winds, storms, climates, and causes, the role of the oceans, landform processes of plate tectonics, mountain building, volcanism, gradation and fluvial processes, and glaciations.

## PHYSICS

**PHY110-A Survey of Physics I 3**
Survey of Physics I is combined lecture and demonstration/ lab course. Forces acting on bodies and their relationship to friction, motion, momentum, work, and energy in the field of mechanics, fluid mechanics, wave motion, and sound are all subjects covered in this course.

**PHY111-A Survey of Physics II 3**
A combined lecture and lab course, this course is a continuation of Survey of Physics I. Optics, electricity, and magnetism, heat, and thermodynamics, introduction to quantum physics and relativity, nuclear and particle physics are all covered in this course. This is a second semester of Survey of Physics I and II sequence of physics non-majors. The course satisfies in part the general education core requirement for AA and AS degree. Prerequisite: PHY110-A

**PHY162-A College Physics I 4**
This is the first of two introductory courses in conceptual physics. Students will learn key concepts in physics and develop problem solving skills in mechanics, heat, and sound. The student will become proficient in topics from mechanics, heat, and sound. Applications of physics to the human body are included. Prerequisite: MAT:073 Intermediate Algebra or 2 years of high school algebra. Trigonometry or high school geometry recommended.

**PHY172-A College Physics II 4**
This is the second of two introductory courses in college physics. Students will learn the fundamental principles of physics and develop problem solving skills in electricity, magnetism, electromagnetic waves and optics, modern physics and nuclear physics. The student will become proficient in topics from electricity, magnetism, electromagnetic waves and optics, modern physics and nuclear physics. Applications of physics to the human body are included. Prerequisite: PHY-162

**PHY212-A Classical Physics I** **5**
This is the first course in a sequence of two physics courses for students planning to major in physics, engineering, mathematics or other physical sciences. Topics include: fundamentals of mechanics, Newton's laws of motion, energy, periodic motions, momentum, fluids, rotation and thermal physics. The application of calculus to physics concepts is used. Corequisite: MAT210-A or consent of instructor.

**PHY222-A Classical Physics II** **5**
This is the second course in a sequence of two physics courses for students planning to major in physics, engineering, mathematics or other physical sciences. Topics include: electricity, magnetism, electromagnetic waves, and optics. The application of calculus to physics concepts is used. Prerequisites: PHY-212, MAT-210, or consent of instructor

## PRACTICAL NURSING

**PNN647-C Nursing Concepts I** **1**
This course introduces the student to nursing concepts that form the foundation for nursing practice. Nursing history, healthcare systems, legal and ethical principles, cultural awareness, roles of the nurse and healthcare team, and introduction to standards for quality and safety in healthcare are included in this theory based course. Prerequisites: HSC113-E, Math elective, BIO165-A, BIO167-A

**PNN648-C Nursing Concepts I** **2**
This course introduces the student to nursing concepts that form the foundation for nursing practice. Nursing history, healthcare systems, legal and ethical principles, cultural awareness, roles of the nurse and healthcare team, and introduction to standards for quality and safety in healthcare are included in this theory based course. Prerequisites: HSC113-E, Math elective, BIO165-A, BIO167-A

**PNN650-C Nursing Concepts IIA** **1**
This course includes special topics not covered in Practical Nursing IA that the practical nurse may encounter during practice. The topics covered are cancer, integumentary disorders including burns, eye and ear disorders, hematological disorders, and emergency care and first aid. The pathophysiology of these topics as well as nursing care, pharmacological and diet therapy principles are integrated throughout the life span of the predictable pediatric and adult client. Prerequisites: PNN647-C, PNN659-C

**PNN654-C Nursing Concepts IIB** **1**
This course prepares the student for the role of the practical nurse. Concepts of management of care, delegation, and prioritization are discussed. Preparation for the NCLEX-PN exam is the basis of the course. Prerequisites: PNN650-C, PNN670-C, PNN671-C, PNN672-C, PNN673-C

**PNN659-C Fundamentals of Nursing** **8**
This course is a combination of theory and lab. Concepts of health, illness, human needs and environment are examined in relationship to communication, nursing process, and nursing roles. Emphasis is placed on the knowledge, skills and attitudes necessary to care for clients with predictable needs in a laboratory setting. Essential information on drug calculations and safe administration of medication and care of the normal newborn and obstetric client are special topics addressed. Prerequisites: HSC113-E, Math elective, BIO165-A, BIO167-A

**PNN660-C Practical Nursing IA** **6**
The emphasis of this course is in the development of higher level concepts and skills within the nursing process and scope of the practical nurse. The roles of the practical nurse as provider of care and manager of care are explored within the health-illness continuum. Pharmacological and diet therapy principles are integrated through the lifespan. Emphasis is placed on the client having surgery, cardiovascular disorders, respiratory disorders, and endocrine disorders. A systematic approach using the knowledge, skills, and attitudes of caring for the predictable pediatric and adult client are explored through clinical and simulation experiences. Prerequisites: PNN659-C, PNN648-C; Corequisite: PNN650-C

**PNN661-C Practical Nursing IB** **5**
This course is a continuation of Practical Nursing IA with an emphasis in the development of higher level concepts and skills within the nursing process and scope of the practical nurse. The roles of the nurse as provider of care and manager of care as well as becoming a member in the discipline of nursing are explored within the health illness continuum. Pharmacological and diet therapy principles are integrated through the lifespan. Emphasis is placed on the client with infections, immune disorders, digestive disorders, urologic disorders, musculoskeletal disorders, neurological disorders, and psychological disorders. A systematic approach using the knowledge, skills, and attitudes of caring for the predictable pediatric and adult client are explored through preceptor experiences. Prerequisite: PNN660-C; Corequisite: PNN654-C

**PNN670-C Practical Nursing IA** **4**
The emphasis of this course is in the development of higher level concepts and skills within the nursing process and scope of the practical nurse. The roles of the practical nurse as provider of care and manager of care are explored within the health-illness continuum. Pharmacological and diet therapy principles are integrated through the lifespan. Emphasis is placed on the client having surgery, cardiovascular disorders, respiratory disorders, and endocrine disorders. Prerequisites: PNN659-C, PNN647-C; Corequisite: PNN671-C

**PNN671-C Practical Nursing IA-Clinical** **2**
This course provides the student with the opportunity to provide care for a variety of clients throughout the lifespan in both the long term care and acute care settings. A systematic approach using the knowledge, skills, and attitudes of caring for the predictable pediatric and adult client are explored through clinical and simulation experiences. Prerequisites: PNN659-C, PNN647-C; Corequisite: PNN670-C

**PNN672-C Practical Nursing IB 4**
This course is a continuation of Practical Nursing IA with an emphasis in the development of higher level concepts and skills within the nursing process and scope of the practical nurse. The roles of the nurse as provider of care and manager of care as well as becoming a member in the discipline of nursing are explored within the health illness continuum. Pharmacological and diet therapy principles are integrated through the lifespan. Emphasis is placed on the client with infections, immune disorders, digestive disorders, urologic disorders, musculoskeletal disorders, neurological disorders, and psychological disorders. Prerequisites: PNN670-C, PNN671-C; Corequisites: PNN673-C, PNN654-C

**PNN673-C Practical Nursing IB—Preceptor 2**
This course provides the student with the opportunity to provide care for a variety of clients throughout the lifespan in the long term care and acute care settings. A systematic approach using the knowledge, skills, and attitudes of caring for the predictable pediatric and adult client are explored through preceptor experiences. Prerequisites: PNN670-C, PNN671-C; Corequisites: PNN672-C, PNN654-C

## POLITICAL SCIENCE

**POL110-A Introduction to Political Science 3**
This course is an overview of the role of modern government in our society. Students will examine the role of government in creating solutions to such contemporary problems as environmental control, law and order, minority groups, poverty, military relations, etc. This course is designed to familiarize students with how our government works to accomplish its goals. This introductory course is an overview of the basic principles and processes of the American political system. The course will include a study of the role on institutions, individuals and interest groups in the process of governance. It will also examine the impact of political theorists and political ideologies on domestic and foreign systems of governance.

**POL111-A American National Government 3**
This course focuses on the major governmental entities in the United States. It examines the governmental process in a democracy and the basic principles of the United States government. Attention is given to the U.S. Constitution, intergovernmental relations, the political process, and the balance of power achieved through the legislative, judicial, and executive branches of the national government.

**POL112-A American State and Local Government 3**
This course examines the operations, problems, and policies of state and local governments in the U.S. Interfacing with other levels of government and financing will also be covered.

**POL121-A International Relations 3**
International Relations is the study of international politics and the interaction between state and non-state actors, with emphasis on those elements underlying the international political system. Topics include the international environment, the structure of interstate relations, the formulation and implementation of policy, and the importance of security, welfare, legality, and morality considerations in international relations.

**POL125-A Comparative Gov't & Politics 3**
Examination of the government and politics of such countries as Great Britain, Mexico, Germany, and Russia. Each nation is viewed in terms of its political culture, party system, executive, legislative, and legal organization.

**POL129-A Politics of Terrorism 3**
This course covers the historical and contemporary issues interrelating terrorism, intelligence and homeland security. The course represents not only a strong scholarly approach to the study of terrorism, but also incorporates the real-world experience of federal agents, police officers, and soldiers tasked with preventing the next terrorist attack on our country. It is designed to help students develop a working knowledge of people, ideas, organizations and current issues in the field. The approach of this course provides students with a unified and cutting-edge understanding of terrorism, intelligence, and homeland security and their interrelationship.

## PARALEGAL

**PRL101-A Paralegal Studies Orientation 3**
Paralegal Studies Orientation surveys the paralegal profession with special emphasis on the major roles and responsibilities of the legal assistant. The course explores the knowledge base required to be a legal assistant and considers the history of the profession.

## PSYCHOLOGY

**PSY102-E Human and Work Relations 3**
This course is designed to assist you in developing an understanding of human behavior within work organizations. Since most challenging problems in the workplace are between people, we focus on communication, motivation, building positive energy, teamwork, conflict resolution, diversity, and gender roles.

**PSY111-A Introduction to Psychology 3**
This course provides exposure to a variety of topics in exploring and studying the human experience. Coverage includes basic neuroanatomy, perception, memory, personality, emotion, learning, psychological disorders, social diversity, and attention is also given to the language and methods of psychology.

**PSY121-A Developmental Psychology 3**
This course provides an overview of human development through the lifespan. Topics covered include prenatal, infant, early childhood, middle childhood, adolescence, and all stages of adulthood. Physical, cognitive, psychological, and social development are considered at each stage in the lifespan in an interactive manner. The language and methods of developmental psychologists are discussed.

**PSY171-A Health Psychology 3**
This course addresses information about psychological aspects of illness, hospitalization and lifestyle choices as they affect health. The course addresses such topics as the effects of stress on illness, lifestyle choices, how health services are used and misused, the patient-practitioners relationship, and the emotional adjustment to chronic illness and hospitalization. This course may be used as a supplemental course for health care students, as well as continuing education units (CEUs) for health care professionals currently working in the field.

**PSY211-A Psychology of Adjustment 3**
Psychology of Adjustment is the study of the adjusting/coping behavior of the individual in various aspects of life situations.

**PSY222-A Child Psychology 3**
Child Psychology is an analysis of psychological development of the child in relation to the biological, physical, and sociological antecedent conditions from prenatal to adolescent stages. Emphasis will be placed on contemporary theories of child psychology, including physical growth and development, personality and social leaning, cognition and perception, and language development. PSY-111 is recommended.

**PSY223-A Child and Adolescent Psychology 3**
Deals with the interplay of biological factors, human interactions, cultural forces and social structures which shape the growing child from conception to adolescence.

**PSY224-A Adolescent Psychology 3**
Psychology of Adolescence explores the rapid physical, social, emotional, and cognitive changes of adolescents. Students distinguish myths about adolescence from research findings and examine the importance of cultural and historical factors in the crucial transition from childhood to adulthood.

**PSY226-A Psychology of Aging 3**
This course will examine the physical, cognitive, social, and psychological changes that occur across the adult years and the factors influencing development in each area. Individual differences in the aging process will be emphasized with attention to the factors contributing to individual differences and the relevance of individual differences in addressing aging issues. The influence of society and societal attitudes toward older adults and the aging process will also be addressed.

**PSY228-A Death & Dying 3**
This course will introduce students to the study of death and dying and the cultural, social, biological, and psychological aspects of death and dying. Topics to be covered include: the reality and definition of death, the grief process, care of the dying, cultural customs related to death and dying, views and attitudes toward death and dying, and the scientific, legal, and ethical issues surrounding death and dying. Exploration of one's own views and attitudes concerning death and dying will be encouraged. In addition, opportunities to visit death-related industries such as funeral homes and cemeteries and to interact with professionals in the field such as hospice workers, grief counselors, and funeral directors will be provided.

**PSY241-A Abnormal Psychology 3**
This course introduces the language and treatment methods of abnormal behaviors, those outside of the range of normal human experience. Topics covered include: disorders affecting mood, anxiety, personality, and substance use. Other topics include schizophrenia, mental retardation, autism, and cognitive disorders as well as legal and ethical issues. Recommended Prerequisite: PSY111-A

**PSY246-A Introduction to Counseling Skills 3**
This course is designed to invite students to explore the key facets of what it means to become an effective helper. Many examples in the textbook, Becoming a Helper, are drawn from situations related to various settings with different types of clients. The book frequently asks the students to consider how they might have worked with a given client or what they might have done in a particular situation. Through various activities and discussions, students are encouraged to integrate and apply what they've learned in each chapter. There are also activities that require students to take action outside of class. Hopefully, these activities help make the issues come alive and allow students to apply their ideas to practical situations.

**PSY251-A Social Psychology 3**
This course is the study of interpersonal relations, social attitudes, group dynamics, inter-group relations, class and cultural influences in a psychological context. PSY-111 is recommended.

**PSY261-A Human Sexuality 3**
The course is designed to explore research about human sexuality and provide accurate information derived from this research. Biological, psychological, social, developmental, and therapeutic perspectives will be covered. Topics include anatomy and physiology, reproduction and family, communication, gender roles, and variations in sexual behavior. Attention is also given to the language and methods of research in human sexuality.

**PSY262-A Psychology of Gender 3**
This course is designed to explore the differences between the male and female gender. Differences in abilities and aptitudes which arise from biology and the brain will be emphasized, although socio-cultural explanations for differences will also be included. In addition, techniques to develop intimacy and harmonious relationships between the sexes will be delineated. The goal of the course is to understand these differences and to decide how males and females can use this understanding to communicate with each other, to get along with each other, and to augment appreciation for both sexes.

**PSY281-A Educational Psychology 3**
Educational Psychology applies the principles of psychology to classroom contexts. Topics include child/adolescent development, learning, motivation, instructional techniques, and assessment/evaluation.

# POWERLINE

**PWL168-C DC Theory 2**
DC Theory is an introductory course. Both theory and hands-on training are provided to cover the basic concepts of electricity. You will acquire a firm grasp of the fundamentals, concepts, and principles of DC theory. Corequisite: Math Elective

**PWL169-C AC Theory 2**
AC Theory is a course that utilizes a combination of lab and classroom instruction to study alternating current. The effects of resistors, inductors, and capacitors in circuits will be covered. Series and parallel RL, RC, RLC circuits, and power factors are also included. Prerequisite: PWL168-C; Corequisite: Math Elective

**PWL170-C Field Training I 4**
Field Training I consists of actual hands-on experience in an out-of-doors college laboratory. This experience parallels the basics learned by a first-year line apprentice. Setting poles with a digger truck, framing poles, climbing, stringing conductors, installing anchors, and safety are taught. Corequisite: PWL189-C

**PWL172-C Field Training II 4**
During this phase of the field training, you will concentrate on accuracy in framing different types of single-phase and three-phase specifications, installing single-phase and three-phase grounding sets, and installing various line protection devices. You will be provided the opportunity to obtain a Commercial Drivers License (CDL) during this course. Prerequisite: PWL170-C; Corequisite: PWL190-C

**PWL174-C Field Training III 4**
This course is in the outdoor lab. It is the hands-on application of transformer installations and services, both single-phase and three-phase. The course goes hand-in-hand with the transformer theory learned in the classroom. Prerequisites: PWL172-C, PWL190-C; Corequisite: PWL191-C

**PWL176-C Field Training IV 4**
This course covers some of the general maintenance and repairs performed by line crews. It covers safety procedure practices for de-energized, as well as energized maintenance, utilizing both hot sticking and rubber gloving techniques. Also covered is hot sticking techniques used for transmission line maintenance. Prerequisite: PWL174-C; Corequisite: PWL183-C

**PWL178-C Field Training V 4**
This course will cover the operation and maintenance of substations. Tasks include basic cable preparation and installation and trencher/backhoe operation. Also covered is the installation and maintenance of high voltage underground distribution systems. Prerequisite: PWL176-C; Corequisites: PWL182-C, PWL186-C

**PWL182-C Underground Distribution 3**
This course provides you with the opportunity to learn the theory and construction of high voltage, direct burial underground cables, enclosures, terminations, and specifications. Corequisite: PWL178-C

**PWL183-C Line Maintenance 3**
This course is primarily designed to teach you the importance of continuity of service to the customer while protecting other workers and the public. This part of the program consists of maintenance work, troubleshooting, and repairs using all necessary safety procedures. You will receive First Aid Training. You will also participate in tree trimming and chain saw safety. Prerequisites: PWL174-C, PWL191-C; Corequisite: PWL176-C

**PWL186-C Transmission and Distribution 3**
This course is designed to give you an overview of the electrical service network from generation transmission to distribution. It will cover generators, switching, and substations, load management systems, and controls. Corequisite: PWL178-C

**PWL189-C Powerline Trade Fundamentals I 2**
This course is designed to give the beginning line worker the basic information of the responsibilities of a line worker. It will supply technical information to support the hands-on application in the outdoor lab. Corequisite: PWL170-C

**PWL190-C Powerline Trade Fundamentals II 2**
This course will cover the operation of line protection devices and the safety procedures required to coordinate such devices. Various single-phase and three-phase construction specifications will be covered. Requirements for equi-potential grounding techniques. Also covered during this course will be the CDL requirements needed to obtain a Class A. Prerequisite: PWL189-C; Corequisites: PWL169-C, PWL172-C

**PWL191-C Transformers & Connections 4**
This course introduces you to the transformation of electricity to obtain useful voltages, basic parts of a transformer and how it works, and discussion of single-phase and many three-phase services and troubleshooting. Lab simulation using miniature transformers reinforces the class work. Prerequisites: PWL169-C, PWL190-C; Corequisite: PWL174-C

**PWL199-E Experiential Learning-Powerline 3**
This course serves as a life experience course building upon life experiences and having the ability to prove competency. All course work will directly relate to the field of powerline. Students will obtain management skills, OSHA training, general knowledge about hydraulics and the trucks they use within industry.

**PWL272-C Powerline Technology Co-Op 6**
As a student in the co-op program, you will receive credit for on-the-job experience that you are receiving in the powerline industry. You will locate your own places of employment, and the Powerline department gives approval or disapproval of the employment station. The experiences must comply with the objectives of the co-op program. Prerequisite: Successful completion of Powerline one-year program or Division Dean approval.

**PWL961-C External Learning-Powerline 1 1**
This course is considered a special topics course. Content of the course will be developed by the instructor and approved by the Dean. Hours spent by the student will be based on the number of credits.

**PWL962-C External Learning-Powerline 2 2**
This course is considered a special topics course. Content of the course will be developed by the instructor and approved by the Dean. Hours spent by the student will be based on the number of credits.

**PWL963-C External Learning-Powerline 3 3**
This course is considered a special topics course. Content of the course will be developed by the instructor and approved by the Dean. Hours spent by the student will be based on the number of credits.

**PWL964-C External Learning-Powerline 4 4**
This course is considered a special topics course. Content of the course will be developed by the instructor and approved by the Dean. Hours spent by the student will be based on the number of credits.

**PWL965-C External Learning-Powerline 5 5**
This course is considered a special topics course. Content of the course will be developed by the instructor and approved by the Dean. Hours spent by the student will be based on the number of credits.

**PWL966-C External Learning-Powerline 6 6**
This course is considered a special topics course. Content of the course will be developed by the instructor and approved by the Dean. Hours spent by the student will be based on the number of credits.

## RADIOLOGIC TECHNOLOGY

**RAD103-E Introduction to Radiologic Technology 1**
This course is designed to give students an introduction to the basic principles of the radiography field. Topics included are Basic Imaging, Physics, Patient Care, and General Positioning. The course will also cover basic mathematics and science related equations. The class is intended for students that are interested in the Radiologic Technology Program.

**RAD104-E Radiologic Patient Care 2**
Students will learn the essential communication skills and techniques for dealing with the severely injured or difficult patient as well as the techniques on how to transfer and care for those patients. Radiologic Technology Program Students only, Corequisites: RAD365-E, RAD142-E, RAD230-E, RAD890-E

**RAD106-E Foundation of Radiologic Technology 2**
This course is intended to teach the basic understanding of radiologic technologist duties and give a general understanding to the principles and terminology that accompany the field. For Radiologic Technology Program Students. Corequisites: RAD122-E, RAD322-E, RAD206-E

**RAD122-E Radiographic Procedures I 4**
This course is intended to define basic radiographic terminology, teach identification of anatomical structures of the chest, abdomen, upper and lower extremities, pelvis and hip on diagrams and radiographs. Students will learn general positioning of each topic listed above and how to utilize critical thinking skills in problems they may encounter in the radiology profession. For Radiologic Technology Program Students. Corequisites: RAD322-E, RAD106-E, RAD206-E

**RAD142-E Radiographic Procedures II 4**
This course is a continuation of Radiographic Procedures I and is intended to define basic radiographic terminology, teach identification of anatomical structures of the cervical, thoracic, and lumbar spine. Students will learn general positioning of each topic listed above and how to utilize critical thinking skills in problems they may encounter in the radiology profession. For Radiologic Technology Program Students, Prerequisite: RAD122-E; Corequisites: RAD365-E, RAD104-E, RAD230-E ,RAD890-E

**RAD162-E Radiographic Procedures III 3**
This course is intended to define basic radiographic terminology, teach identification of anatomical structures of the skull and facial bones as well as fluoroscopy. A brief lecture of mammography, CT, MRI, nuclear medicine and ultrasound will be included. Students will learn general positioning of each topic listed above and how to utilize critical thinking skills in problems they may encounter in the radiology profession. Prerequisite: RAD142-E; Corequisites: RAD260-E, RAD182-E

**RAD182-E Special Procedures 2**
The student will review anatomy and physiology of the circulatory and central nervous system. Students will learn how contrast media is used and the possible reactions. Specialized instruments and equipment will be incorporated as part of special procedures. New modalities such as CT, ultrasound, nuclear medicine, MRI, and radiation therapy will be presented along with the different techniques that accompany each modality. Corequisites: RAD260-E, RAD162-E

**RAD206-E Clinical Education I 2**
This course is designed to meet the practical and hands-on experiences that will accompany the lecture and labs a student will receive in a classroom setting. These required shifts will take place in a hospital or clinical setting and emphasis will be made on the ability to adapt to different situations that cannot be simulated in the classroom. It is also designed to apply patient care and general knowledge of a radiology department. There are five levels of clinical practicum. Upon completing each level, each student will be expected to add knowledge and confidence in the work field. Level 1-General knowledge of a working x-ray department and patient care. Corequisites: RAD122-E, RAD106-E, RAD322-E

**RAD230-E Clinical Education II 4**
This course is designed to meet the practical and hands-on experience that will accompany the lecture and labs a student will receive in a classroom setting. These required shifts will take place in a hospital or clinical setting and emphasis will be made on the ability to adapt to different situations that can not be simulated in the classroom. It is also designed to apply patient care and general knowledge of a radiology department. There are five levels of clinical practicum. Upon completing each level, each student will be expected to add knowledge and confidence in the work field. Level II - Knowledge of hospital policies and procedures. Knowledge of each individual routine exams pertaining to each individual site. Prerequisites: RAD206-E; Corequisites: RAD365-E, RAD104-E, RAD142-E, RAD890-E

**RAD260-E Clinical Education III 3**
This course is designed to meet the practical and hands-on experience that will accompany the lecture and labs a student will receive in a classroom setting. These required shifts will take place in a hospital or clinical setting and emphasis will be made on the ability to adapt to different situations that cannot be simulated in the classroom. It is also designed to apply patient care and general knowledge of a radiology department. There are five levels of clinical practicum. Upon completing each level each student will be expected to add knowledge and confidence in the work field. Level III - Be able to work as an individual in a department and with consistency in film quality and evaluation. Prerequisite: RAD230-E; Corequisites: RAD162-E, RAD182-E

**RAD321-E Imaging I 3**
This course is designed with the intent to prepare students to be able to understand how an x-ray beam is produced, the different types of equipment and how they function, and the principles behind x-ray generation. Corequisites: RAD122-E, RAD106-E

**RAD322-E Imaging I 4**
This course is designed with the intent to prepare students to be able to understand how an x-ray beam is produced, the different types of equipment and how they function, and the principles behind x-ray generation. Corequisites: RAD122-E, RAD106-E, RAD206-E

**RAD362-E Computer & Digital Radiography 2**
This course is designed to place an emphasis on dealing with the ever changing technology a new technologist will have to encounter. A brief understanding of a PACS system will be introduced as well as the various types of computer oriented equipment they will be expected to operate while in the field. Corequisites: RAD750-E, RAD550-E, RAD690-E

**RAD365-E Imaging II 2**
This course is a continuation of Imaging I and is designed with the intent to prepare students to be able to understand how an x-ray beam is produced, the different types of equipment and how they function and principles behind x-ray generation. Prerequisite: RAD322-E; Corequisites: RAD104-E, RAD142-E, RAD230-E, RAD890-E

**RAD510-E Clinical Education IV 6**
This course is designed to meet the practical and hands-on experience that will accompany the lecture and labs a student will receive in a classroom setting. These required shifts will take place in a hospital or clinical setting and emphasis will be made on the ability to adapt to different situations that can not be simulated in the classroom. It is also designed to apply patient care and general knowledge of a radiology department. There are five levels of clinical practicum. Upon completing each level each student will be expected to add knowledge and confidence in the work field. Level IV - Have student work with same knowledge that a graduate of accredited school would have with the exception of headwork. Prerequisite: RAD260-E; Corequisites: RAD761-E, RAD851-E, RAD797-E

**RAD550-E Clinical Education V 6**
This course is designed to meet the practical and hands-on experience that will accompany the lecture and labs a student will receive in a classroom setting. These required shifts will take place in a hospital or clinical setting and emphasis will be made on the ability to adapt to different situations that cannot be simulated in the classroom. It is also designed to apply patient care and general knowledge of a radiology department. There are five levels of clinical practicum. Upon completing each level each student will be expected to add knowledge and confidence in the work field. Level V - Designed to refine and transform skills. Prerequisite: RAD510-E; Corequisites: RAD750-E, RAD362-E, RAD690-E

**RAD580-E Clinical Education VI 4**
This course is designed to meet the practical and hands-on experience that will accompany the lecture and labs a student will receive in a classroom setting. These required shifts will take place in a hospital or clinical setting and emphasis will be made on the ability to adapt to different situations that can not be simulated in the classroom. It is also designed to apply patient care and general knowledge of a radiology department. There are five levels of clinical practicum. Upon completing each level each student will be expected to add knowledge and confidence in the work field. Level VI-Designed to refine and transform skills. Prerequisite: RAD550-E; Corequisite: RAD947-E

**RAD582-E Clinical Education VI 3**
This course is designed to meet the practical and hands-on experience that will accompany the lecture and labs a student will receive in a classroom setting. These required shifts will take place in a hospital or clinical setting and emphasis will be made on the ability to adapt to different situations that can not be simulated in the classroom. It is also designed to apply patient care and general knowledge of a radiology department. There are five levels of clinical practicum. Upon completing each level each student will be expected to add knowledge and confidence in the work field. Level VI-Designed to refine and transform skills. Prerequisite: RAD550-E; Corequisite: RAD949-E

**RAD690-E Cross Sectional Anatomy 1**
This course aims to serve the radiography student with the knowledge in advance to be able to specialize in a modality such as CT (computed tomography) or MRI (magnetic resonance imaging) and to help satisfy the interest that may be expressed in CT or MRI in learning cross-sectional anatomy. Corequisites: RAD750-E, RAD550-E, RAD362-E

**RAD750-E Radiographic Pathology 3**
This course provides the advanced radiography student with the basic knowledge of different pathology and how it will appear on a radiograph. It will also help the student be able to recognize each disease as well as how it will appear on particular radiographs. Corequisites: RAD550-E, RAD362-E, RAD690-E

**RAD761-E Film Evaluation 3**
This course is designed to teach the anatomy and how it is to be positioned on each radiograph with an emphasis on how to correct the radiograph if anatomy is out of position. The different fracture types, growth plates and fat pads will be identified on each area of the body as well as how to identify pathology. Corequisites: RAD851-E, RAD510-E, RAD797-E

**RAD796-E Physics for Radiographers 4**
This course makes it possible for students to have a firm grasp on the essential mathematics that are required to calculate and achieve the desired outcome of a problem that may occur in everyday radiographs. It will also review the general fields of arithmetic, algebra and plane geometry. It is also designed to aid in the problems of determining magnification, interpretation of tube rating charts, calculated absorbed dose and technique. Corequisites: RAD761-E, RAD851-E, RAD510-E

**RAD797-E Physics for Radiographers 3**
This course makes it possible for students to have a firm grasp on the essential mathematics that are required to calculate and achieve the desired outcome of a problem that may occur in everyday radiographs. It will also review the general fields of arithmetic, algebra and plane geometry. It is also designed to aid in the problems of determining magnification, interpretation of tube rating charts, calculated absorbed dose and technique. Corequisites: RAD761-E, RAD851-E, RAD510-E

**RAD851-E Radiation Protection and Biology 2**
This course is designed to teach students how to use different methods of protections available to them to help keep the safety of their patients as well as themselves from ionizing radiation. Corequisites: RAD761-E, RAD510-E, RAD797-E

**RAD890-E Quality Assurance 1**
This course is designed to make sure each radiography student is able to recognize the correct technique settings as well as making sure all equipment is functioning correctly. Each piece of equipments' standard numbers will be discussed as well as how to know if a piece of radiographic equipment is functioning correctly and within exact specifications. For Radiologic Technology Program Students Corequisites: RAD104-E, RAD142-E, RAD230-E, RAD365-E

**RAD947-E Radiographic Seminar 2**
This course will introduce students to the general format of the boards as well as what is expected of them for each subject matter. The application criteria and process of becoming eligible for boards will be reviewed. Test taking strategies and locations of sites where test is available to them will also be covered. Corequisite: RAD580-E

**RAD949-E Seminar 3**
This course will introduce students to the general format of the boards as well as what is expected of them for each subject matter. The application criteria and process of becoming eligible for boards will be reviewed. Test taking strategies and locations of sites where test is available to them will also be covered. Corequisite: RAD582-E

## RELIGION

**REL101-A Survey of World Religions 3**
This course is an in-depth introduction to major world faiths including Christianity, Hinduism, Buddhism, Islamism, Confucianism, Taoism, Judaism, and tribal religions. Emphasis will be placed on the interaction of religion and culture and on cross-cultural understanding.

**REL150-A Introduction to the Bible 3**
This course introduces the practice of the contextual method of reading a text as applied to the biblical materials. It asks: What kind of material is this? Who wrote it? To whom they were writing in their own time? What were they trying to say to those people in that situation? The course is not devotional or applicational, but literary and historical.

## STUDENT DEVELOPMENT

**SDV108-A The College Experience 1**
This course introduces students to the college's expectations, environment, and resources so that they may become successful in their college experience.

**SDV130-A Career Exploration 1**
Exploration of factors affecting career choice. Identification and discussion of individual values, interest and abilities related to occupations. Overviews of the world of work as it relates to career and academic planning. Expansion of career development knowledge, skills and use of resources.

**SDV135-C Job Seeking Skills 1**
You will construct a resumé, cover letter, and reference sheet in this course. This course includes interviewing and job search techniques.

**SDV810-C Experiential Learning 10**
This course allows credit to be granted to a student for experiential learning gained through work experience or personal study which can be validated through an assessment procedure developed by the College.

## SUSTAINABLE ENERGY RESOURCES

**SER106-E Integration of Alternative Sources of Energy 2**
Integration of Alternative Sources of Energy is designed to introduce students to energy sources, applications and alternatives that deal with the many aspects of our energy systems. The course will introduce students to how we extract, process, convert, and use energy to power our technology. Alternative energy deals heavily with the different sources of alternative energy, where they come from and how we can use them to conserve and eventually replace dwindling fossil fuels. The course has been organized into nine assessment areas that will develop students' knowledge, skills and disposition necessary to complete the course.

## SOCIOLOGY

**SOC110-A Introduction to Sociology 3**
This course introduces you to the field of sociology which is the study of the relationship between the individual and society. Topics covered include: culture, social organization, groups, deviance, race, and ethnicity and methods of affecting social change. Language and methods are discussed.

**SOC115-A Social Problems 3**
This course provides insight on current social problems from a sociological perspective. Topics covered include sexism, racism, urban crisis, violence and crime, and the environment. Potential causes and solutions together with methods of analysis will be examined. Recommended Prerequisite: SOC110-A

**SOC120-A Marriage and Family 3**
This course examines the family structure in current society. The course of study includes a look at structure, problems, and challenges including premarital interaction, mate selection, marital sexual adjustment, communications, and social and economic roles.

**SOC160-A Introduction to Social Work 3**
This introductory course in social welfare systems and social work practice surveys the historical development of the social work profession, in conjunction with the development of social welfare services in the United States, social welfare system responses to a variety of current social problems, generalist social work as a distinct profession and specific settings and methods of social work practice.

**SOC186-A Contemporary Global Issues 3**
A survey course to identify and analyze the variety and extent of global economic, political, social and cultural problems and issues.

**SOC200-A Minority Group Relations 3**
Survey of the contributions that various minorities have made to the development of the United States.

**SOC210-A Men, Women & Society 3**
This is an interdisciplinary course designed for first or second year students which will explore men's and women's experiences in American society and the role that ideas about sexual differences have played in shaping those experiences. Areas of inquiry will include, but are not limited to, the following: the construction of gender roles and sexuality, the relationship between gender and other social, political, and legal structures and institutions and the interplay of gender with race, class, and ethnicity in cultural perceptions and expectations of both men and women. This course will strive to assist students in formulating questions about gender as it relates to their on-going work in various disciplines across the curriculum.

**SOC212-A Diversity 3**
This course utilizes an interdisciplinary and intersectional approach to studying gender, race, class, sexuality and other issues of diversity. The curriculum highlights the duality of oppression and privilege and the ways in which race, gender, class and sexuality shape daily life. Special focus is on learning how to demonstrate course concepts as social action. Social justice is practiced as students become educated in these concepts of diversity and engage in diversity conscious social action.

**SOC220-A Sociology of Aging 3**
This course will help the student become informed of some of the issues of aging (both in the United States and internationally). Aging is not what it used to be. It is more than retirement homes, rocking chairs, health and money concerns. Today's older populations is called the third age and includes people from fifty years of age and beyond. This group is active and very diverse. The course is designed to be interdisciplinary and therefore will include perspective from sociology, psychology, social work, anthropology, biology, health sciences, and history.

**SOC230-A Juvenile Delinquency 3**
Juvenile justice system is examined from historical, constitutional and operational perspectives. Theories concerning juvenile delinquency are explored.

**SOC240-A Criminology 3**
Criminology surveys the history, nature, and causes of crime criminal behavior patterns, investigation, and prosecution correctional methods and the structure of the prison system. The criminal behavior patterns include violent crimes, property crime, political crime, white collar crime, organized crime, and public order crime.

**SOC251-A Social Psychology 3**
The study of interpersonal relations, social attitudes, group dynamics, inter-group relations, class and cultural influences in a psychological context.

## SPEECH

**SPC101-A Fundamentals of Oral Communication 3**
This course is designed to help the student develop the basic skills involved in a variety of speaking situations, including oral presentations and interpersonal speaking. Emphasis is placed on such areas as organization, delivery, listening, audience analysis, and methods of reducing nervousness.

**SPC112-A Public Speaking 3**
The emphasis in this course is placed on actual speaking experiences. Instruction focuses on the theory of preparation and presentation, application and practice, and observation and listening, and on the giving of critical feedback. Types of speeches assigned will include informative, persuasive, and special occasion.

**SPC122-A Interpersonal Communication 3**
Interpersonal Communication examines the skills of interpersonal communication in both a dual or group situation. It includes an investigation into the process of communication, language, nonverbal communication, listening, self-concept, emotions or the nature of relationships and conflict.

## WORKPLACE BASED LEARNING

**WBL100-E Exploring Careers 3**
This course will provide guidance in choosing a career goal and preparing for employment. Emphasis will be placed on identifying interests, abilities, and values, and exploring options for careers. Students will learn how to access labor market information and employment trends. Additionally, students will develop the skills and aptitudes necessary to obtain employment, emphasizing the development of characteristics associated with job success.

**WBL110-E Employability Skills 2**
This course is designed to assist students in developing the skills necessary to obtain employment, and to learn and practice the skills and attitudes required for job success. Students will practice resume writing, job application completion, and interviewing techniques. Additionally, students will practice work-place problem solving strategies, and demonstrate skills required to work in a diverse environment.

**WBL140-E Workplace Project Based Learning 3**
Students in this course learn the concept of project based learning in the workplace, and develop and implement projects in cooperation with local businesses, community organizations, or non-profit agencies. Projects are developed under the supervision of a college faculty member.

**WBL150-E Job Shadowing 2**
Students in this course will explore a field of interest while developing research skills, professionalism, and building occupational knowledge. Students will visit workplaces of interest to learn about specific jobs and professional requirements, and to develop a basic knowledge of the organization's structure and values.

**WBL152-E Job Shadowing: Science, Technology, Engineering and Mathematics 2**
Students in this course will explore the field of Science, Technology, Engineering, and Manufacturing while developing research skills, professionalism, and building occupational knowledge. Students will visit workplaces in this employment sector to learn about specific jobs and professional requirements, and to develop a basic knowledge of the organization's structure and values.

**WBL154-E Job Shadowing: Health Sciences 2**
Students in this course will explore the field of Health Sciences while developing research skills, professionalism, and building occupational knowledge. Students will visit workplaces in this employment sector to learn about specific jobs and professional requirements, and to develop a basic knowledge of the organization's structure and values.

## WEB DEVELOPMENT

**WDV221-E Javascript 3**
This specialization course will introduce the student to intermediate concepts in web design. Students will gain scripting skills using JavaScript and DHTML while learning how to approach and develop complex websites.

**WDV245-E Content Management Systems 3**
This specialization course will introduce the student to advanced concepts in web development. Students will begin developing skills in scripting JavaScript and Document Object Model (DOM) scripting.

**WDV920-A Web Design Capstone 3**
This course prepares students to enter the workforce. Under the direction of their instructor, students may intern in a professional graphic design setting or explore job seeking strategies.

# WELDING

**WEL120-E Oxy Fuel Welding and Cutting 2**
This course is a combined lecture and lab course. It presents basic fundamentals, the operation of equipment, and safety practices. It includes fusion welding and brazing on light gauge metals, cutting on heavy and light gauge metals, and welding of small diameter pipe.

**WEL152-C Shielded Metal-Arc Welding Lab I 3**
This course covers basic arc welding procedures in the flat, horizontal, vertical and overhead positions using carbon steel plate and mild steel electrodes. Application of E-6010, E-6011, E-6013, and E-7018 and various other electrodes are used.

**WEL186-E GMAW 4**
This course is a combined lecture and lab course. It presents the Gas Metal Arc Welding (MIG) process used extensively by industry. It also emphasizes hands-on application, metal transfer concepts, GMAW equipment, welding procedures, out of position welding, and safety.

**WEL187-C Advanced GMAW 4**
Advanced Gas Metal Arc Welding introduces you to advanced wire feed processes such as stainless steel, aluminum, flux cored arc welding, submerged arc welding, and metal core. Setup and adjustment of equipment for welding on various thickness of stainless, aluminum, and steel will be emphasized.

**WEL191-C Tungsten Arc Welding 3**
This course is a combined lecture and lab course. It presents Tungsten Inert Gas (TIG) welding process. It studies equipment use, welding procedures, welding of common metals and safety precautions. This course also covers welding in all positions on ferrous and non-ferrous metals, and small diameter pipe.

**WEL200-C Metallurgy Fundamentals 2**
This course covers basic metallurgy, destructive, and non-destructive testing methods which the students will see or possibly use in industry.

**WEL206-C Quality Assurance Program 2**
Provides the student with a thorough technical understanding of the elements that must be considered to develop a quality assurance and quality control program. Information is presented to explain the relationship between cost and weld quality and the duties typically performed by the welding inspector.

**WEL265-C Introduction to Welding Fabrication 3**
This course is designed to introduce the students to the basic fundamental of welding and introduction to fabrication. Procedures used in Shielded Metal Arc Welding and Gas Metal Arc Welding are emphasized. Oxyacatylene cutting and welding are also covered.

**WEL308-C Pipe Welding 4**
This course covers in-depth study of pipe welding with the Shielded Metal Arc Welding (SMAW) and Gas Tungsten Arc Welding (GTAW).

**WEL320-C Welding Fabrication 3**
This course is an introduction to fundamental metal fabrication methods. The application and use of basic measuring tools and layout techniques are covered in detail. Corequisite: WEL187-C or WEL191-C