

# IOWA'S COMMON COURSE DESIGNATIONS

Accounting	ACC	Dental Lab Technology	DLT
Administrative Assistant	ADM	Diesel	DSL
Aging Services Management	ASM	Disability Services	DSV
Agriculture—Agronomy	AGA	Drafting	DRF
Agriculture—Animal Science	AGS	Early Childhood Education	ECE
Agriculture—Comprehensive-Miscellaneous	AGC	Economics	ECN
Agriculture—Equine	AGE	Education	EDU
Agriculture—Farm Mgt-Business	AGB	Electrical Technology	ELE
Agriculture—Floral	AGF	Electroneurodiagnostic Tech	END
Agriculture—Horticulture	AGH	Electronics	ELT
Agriculture—Mechanics	AGM	Emergency Medical Services	EMS
Agriculture—Natural Resources and Forestry	AGN	Engineering Technology	EGT
Agriculture—Precision Ag	AGP	English Composition	ENG
Agriculture—Technology	AGT	Environmental Science	ENV
Agriculture—Vet Tech	AGV	Film and Theatre	DRA
American Sign Language	ASL	Finance	FIN
Anthropology	ANT	Fire Science	FIR
Apparel Merchandising	APP	Foreign Language— Arabic	FLA
Applied Music	MUA	Foreign Language—Chinese	FLC
Architectural	ARC	Foreign Language—French	FLF
Architectural Millwork	MLW	Foreign Language—German	FLG
Art	ART	Foreign Language—Italian	FLI
Associate Degree Nursing	ADN	Foreign Language—Japanese	FLJ
Auto Tech—ASEP (GM)	ATG	Foreign Language—Russian	FLR
Auto Tech—ASSET (Ford)	ATF	Foreign Language—Spanish	FLS
Auto Tech—CAP (Chrysler)	ATC	General Music	MUS
Auto Tech—TSEP (ACDelco)	ATT	General Phys Ed and Health	PEH
Automation Tech and Robotics	ATR	Geography	GEO
Automotive Technology	AUT	Graphic Communications	GRA
Aviation	AVI	Health Care Administration	HCA
Aviation Maintenance	AVM	Health Information Technology	HIT
Band Instrument Repair	BIR	Health Safety and Environ Tech	HSE
Biology	BIO	Health Sciences	HSC
Bioprocess Technology	BPT	Health Unit Coordinator	HUC
Building Maintenance	BMA	Heating and Air Conditioning	HCR
Business	BUS	Heavy Equipment	HEQ
Business Computer Apps	BCA	History	HIS
Caterpillar Technology	CAT	Hospitality, Culinary Arts and Mg	HCM
Chemistry	CHM	Human Services	HSV
Chiropractic	CHR	Humanities	HUM
Civil Engineering Technology	CET	Industrial Technology	IND
Coaching Officiating	PEC	Intensive ESL	ESI
Collision Repair & Refinish	CRR	Intercollegiate Phys Ed	PEV
Commercial Art	CRT	Interior Design	INT
Commercial Photography	PHT	Interpreting	ITP
Communication	COM	Interpreting & Translation	ITR
Computer Aided Drafting	CAD	Journalism	JOU
Computer Forensics	CRF	Laser Electro-Optics Tech	LEO
Computer Networking	NET	Legal Assistant	LGL
Computer Programming	CIS	Literature	LIT
Computer Science	CSC	Management	MGT
Conservation Technology	CNS	Manufacturing	MFG
Construction	CON	Marine and Small Engine Tech	MSE
Cosmetology	COS	Marketing	MKT
Cultural Studies	CLS	Masonry	MAS
Dance	DAN	Mass Media Studies	MMS
Dental Assistant	DEA	Massage Therapy	MST
Dental Hygiene	DHY	Mathematics	MAT

# COURSE DESCRIPTIONS

Medical Assistant  
 Medical Assistant  
 Medical Lab Tech  
 Medical Transcription  
 Military and ROTC  
 Mortuary Service  
 Motorcycle Technology  
 Non-intensive ESL  
 Occupational Therapy Assisting  
 Office Administration  
 Optometric/Ophthalmic Assistant  
 Paralegal  
 Parts Dist. and Inv. Control  
 Pharmacy Tech  
 Philosophy  
 Phlebotomy  
 Physical Education Activities  
 Physical Education Training  
 Physical Science  
 Physical Therapist Assistant  
 Physics  
 Political Science  
 Powerline  
 Practical Nursing  
 Psychology  
 Radiologic Technology  
 Reading  
 Recreation  
 Registered Nurse First Assistant  
 Religion  
 Respiratory Therapy  
 Science  
 Sign Communication Skills  
 Sociology  
 Speech  
 Structural Steel  
 Student Development  
 Surgical Technology  
 Travel and Tourism  
 Truck Driving & Transp.  
 Virtual Reality Technology  
 Water Environmental Tech  
 Welding  
 Wind Energy and Turbine Tech  
 Women's Studies

HSC  
 MAP  
 MLT  
 MTR  
 MIL  
 MOR  
 MOT  
 ESL  
 OTA  
 OFF  
 OPT  
 PRL  
 PAR  
 PHR  
 PHI  
 PHB  
 PEA  
 PET  
 PHS  
 PTA  
 PHY  
 POL  
 PWL  
 PNN  
 PSY  
 RAD  
 RDG  
 REC  
 RNF  
 REL  
 RCP  
 SCI  
 SCS  
 SOC  
 SPC  
 STR  
 SDV  
 SUR  
 TRV  
 TDT  
 VRT  
 WAT  
 WEL  
 WTT  
 WST

## ACCOUNTING

ACC052-H Accounting A 3  
 This course uses a general journal approach to record transactions for proprietorships and partnerships in service and merchandising businesses. The topics of this course include analyzing transactions, recording transactions in a general journal or in special journals, posting to a ledger, preparing financial statements, and preparing payroll records. (AT-021H)

ACC053-H Accounting B 3  
 This course uses special journals to record transactions for a corporation. The topics of this course include recording transactions, accounting for uncollectible accounts receivable, accounting for plant assets and depreciation, accounting for inventory, accounting for notes and interest, accounting for accrued revenue and expenses, distributing dividends, and preparing a worksheet and financial statements for a corporation. (AT-022H)

ACC118-C Introduction to Accounting Systems 3  
 This is a course in beginning accounting, emphasizing the basic principles, practices, and terminology of accounting. The focus is on accounting for a small business (sole proprietorship), and the units covered will take you through the accounting cycle (including adjusting entries). (AT-100C)

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. **Corequisite: ACC133-C for Accounting Program students only.** (AT-110A) ☆

ACC132-A Principles of Accounting II 4  
 In this course you will learn the fundamentals of managerial accounting for decision making, financial statement analysis, and accounting for manufacturing firms. **Prerequisite: ACC131-A; Corequisite: ACC134-C for Accounting Program students only.** (AT-160A) ☆

ACC133-C Principles of Accounting I Lab 2  
 In this course you will be given typical accounting problems to complete under the supervision of your instructor. These problems will be devoted to the practice of the accounting principles and procedures studied in ACC131-A. **Corequisite: ACC131-A.** (AT-102C)

ACC134-C Principles of Accounting II Lab 2  
 Under the supervision of your instructor, you will be given problems to do involving cash flow statements, financial statement ratio analysis, product costing budgeting, and performance analysis. You will also work on problems involving cost behaviors and costs that are relevant for management decision-making. **Corequisite: ACC132-A.** (AT-104C)

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. **Prerequisite: ACC132-A.** (AT-219E)

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

A=Transfer

E=Recommended for Transfer

C=Trade & Technology

H=Developmental

(Course number listed in parenthesis at end of description denotes former course number.)

☼ = class offered online only

☆ = class offered online and on-campus

ACC191-E Financial Analysis	3	ACC261-A Income Tax Accounting	3
This fundamental managerial finance course will introduce you to the theories involved with maximizing shareholder wealth within a set of corporate risk-return characteristics. <b>Prerequisite:</b> ACC132-A. (AT-213E)		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. (AT-224A) ☆	
ACC211-A Cost Accounting	3	ACC265-A Income Tax Accounting	4
The course develops an understanding of the accounting methods for manufacturing and service enterprises including analysis techniques for management. (AT-221A) ☆		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. <b>Prerequisite:</b> ACC132-A. (AT-209A)	
ACC222-A Cost Accounting	4	ACC311- A Computerized Accounting	3
You will learn to account for the distribution of materials, labor, and overhead costs under job order, process, standard cost, and activity-based systems. You will relate the principles and methods of applying manufacturing costs and expenses to the formation of reports for management. <b>Prerequisite:</b> ACC132-A; <b>Corequisite:</b> ACC223-C for Accounting Program students only. (AT-205A)		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. <b>Prerequisite:</b> Principles of Accounting I. (AT-123A) ☆	
ACC223-C Cost Accounting Lab	2	ACC312-E Computer Accounting	4
You will complete typical cost accounting problems under the supervision of your instructor. <b>Corequisite:</b> ACC222-A. (AT-206C)		In this course, you will get hands-on experience dealing with integrated accounting computer programs. You will utilize the computer to generate journals, ledgers, and financial statements. In addition, you will use the computer to do financial statement analysis, compute depreciation schedules, perform payroll operations, and prepare payroll reports. <b>Prerequisite:</b> ACC131-A. (AT-105E)	
ACC231-A Intermediate Accounting I	4	ACC362-E Accounting Spreadsheets	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. <b>Prerequisite:</b> ACC132-A; <b>Corequisite:</b> ACC233-C for Accounting Program students only. (AT-201A) ☆		You will use spreadsheet and presentation software to create and present accounting information calculated and used in the field. <b>Prerequisites:</b> ACC231-A, and BCA217-E. (AT-207E)	
ACC232-A Intermediate Accounting II	4	ACC851-C Tax Accounting Lab— VRPP Volunteer Return Preparation Program	2
In this course you will study long-term investments, current and contingent liabilities, long-term liabilities, leases, pensions, owner's equity, financial reporting, and statement analysis. <b>Prerequisite:</b> ACC231-A; <b>Corequisite:</b> ACC234-C Accounting Program students only. (AT-203A) ☆		VRPP, an acronym for Volunteer Return Preparation Program, is a nationwide program sponsored by the Internal Revenue Service (IRS). VRPP volunteers prepare federal and state income tax returns, at no charge, for primarily low-income individuals. The course is designed to give students an experiential and service learning opportunity. <b>Prerequisite:</b> ACC265-A. (AT-241C)	
ACC233-C Intermediate Accounting I Lab 2			
The accounting lab is devoted to the practice of the accounting principles and procedures studied in the intermediate accounting courses. You will in the intermediate accounting courses be given typical problems to complete under the supervision of the instructor. <b>Corequisite:</b> ACC231-A. (AT-202C)			
ACC234-C Intermediate Accounting II Lab2			
The accounting lab is devoted to the application of the accounting principles and procedures studied in the intermediate accounting courses. You are given typical problems to complete under the supervision of your instructor. <b>Corequisite:</b> ACC232-A. (AT-204C)			

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## ADMINISTRATIVE ASSISTANT

ADM010-H Developmental Keyboarding	2	ADM111-C Keyboarding	4
Developmental keyboarding is a self-paced course designed to help you achieve accuracy and speed for entry of data on a computer keyboard. The computer program increases speed and accuracy by concentrating on weak areas; it remembers mistakes and then formulates lessons that focus on troublesome keys and key sequences. This is a pass/fail course. (BU-020H)		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. (BU-100C)	

ADM166-C Office Procedures I 3  
This course provides an in-depth knowledge of professional office procedures, comprehensive coverage and integration of business skills with current issues and trends, and 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, reprographics, and information and communications systems are included. This is the capstone course of the Administrative Secretarial program. **Prerequisite:** BCA195-C; **Corequisite:** BCA196-C. (BU-129C)

ADM167-C Office Procedures II 3  
This is a continuation of Office Procedures I. This course will emphasize meeting, conference, and travel planning; technology; records and financial management; career advancement strategies for the administrative professional; and effective leadership characteristics. **Prerequisite:** ADM166-C; **Corequisite:** BCA197-C. (BU-131C)

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. **Prerequisite:** The student must have taken/or be taking all courses required for the successful completion of the Administrative Secretarial Diploma program and have a minimum grade point average of 2.5. All internships must be approved by the Administrative Secretarial Instructor (or designee). (BU-210C)

ADM932-C 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. **Prerequisite:** ADM900. (BU-211C)

ADM946-C Seminar 3  
This course maintains 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. (BU-251C)

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## ASSOCIATE DEGREE NURSING

ADN215-A Clinical Pharmacology 3  
This 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 patient care and patient education. Pharmacological principles will include reviewing physiology and pathophysiology, discussing basic properties of drug families, focusing on essentials of drug administration such as indications, contraindications, adverse effects, and drug interactions and demonstrating the application of pharmacology to nursing practice. **Corequisite:** ADN651-C. (SC-135A)

ADN651-C ADN Nursing I 13  
This course is combination of lecture, lab, and clinical components. The course provides an overview of the nursing program at NCC and the role change from the Practical Nurse level to the Registered Nurse role. Health, illness, and healthcare environment are examined as they relate to the care of patients, with variable needs, from selected health patterns. 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 professional nurse and on development of skills necessary to think critically and implement sound reasoning skills when caring for patients.

ADN652-C ADN Nursing II 13  
This course is a combination of lecture, clinical, and preceptor components. The course provides an opportunity for synthesis and evaluation of professional nursing role behaviors essential to care of patients experiencing complex care 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, including those appropriate to individual patients, their families/significant others, and relevant population-based groups. **Prerequisites:** ADN651-C, ADN215-A BIO183-A, BIO184-A. (NU-271C)

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## AGRICULTURE

AGA114-E Principles of Agronomy 3  
This course is 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-E 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-E 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.

AGA376-E Integrated Pest Management 3  
Integrated Pest Management teaches observation techniques for pest control which includes disease, insect and weed problems as well as techniques for developing and evaluating pest management programs, and procedures involved in integrated pest management.

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-E Introduction to Agriculture Markets 3  
Introduction to Agricultural 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.

AGB326-E Farm Records Keeping Accounts and Analysis 3  
No description at this time.

AGB330-E Farm Business Management 3  
This course is a study of the use of the principles of farm management in developing a farm or farm business operation. **Prerequisite: AGB326**

AGB331-E Entrepreneurship in Agriculture 3  
Entrepreneurship in Agriculture relates specifically to management of agriculture farms and businesses. Course content emphasizes budget planning, record keeping, record analysis, ag finance/credit, and machinery and land management. Management exercises simulating farm activities and decisions are incorporated. Microcomputers are used to aid in the completion of these management exercises.

AGB336-E Agriculture Selling 3  
This course covers 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.**

AGB437-E 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.

AGC420-E 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.

AGC936-E Occupational Experience 3  
No description at this time.

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

AGM155-E 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) rowcrop cultivator; 2) square baler; 3) disk/harrow; 4) field cultivator. This 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-E Introduction to GPS 3  
This course is an introduction to the use of GPS and VRT as it impacts agricultural producers. Students will use field mapping software and GPS systems as part of the class.

AGS113-E Survey of Animal Industry 3  
This course is an introduction in animal science through the topics of animals in society, biological principles, stewardship, and animal industries as they relate to animal production in the U.S. and the world.

AGS228-E Beef Cattle Science 5  
This course deals with the retail beef industry, management decisions of the cow-calf and the yearling-stocker producers, major health problems and their prevention/treatment, ruminant nutrition balance rations and forage resource management.

AGS242-E 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-E Foods of Animal Origin 3  
This is 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-E Animal Nutrition 3  
This course covers nutritional principles, digestive systems, composition and nutritional characteristics of common feedstuffs, ration formulation and recommended feeding programs for farm animals. **Prerequisites: AGS113-E and CHM112-A or permission of instructor.**

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## 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. (HU-247A) ~@

## 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. (HU-210A) ☆

**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. (HU-268A) ♪

**ART133-A Drawing** 3  
This course in the visual arts is designed to give you an introduction to the fundamental concepts and techniques of drawing. The student will use a variety of media; graphite pencils, charcoal, conte crayons, pen and inks, ballpoints, etc. Emphasis will be placed on exploration and development of individual expression of forms and context. (HU-259A)

**ART143-A Painting** 3  
This course is designed to provide familiarity with the basic materials, tools, and techniques of oil painting and acrylic. You will work with the elements of pictorial organization and expression. (Painting supplies required.) (HU-260A)

**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. (HU-233A)

**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. (HU-261A) ♪

**ART204-A Art History II** 3  
Art History II surveys the visual arts from the Renaissance to the present time, with emphasis on the relationship between art and social, economic, religious, and technological developments. This course stresses historical context of contemporary forms of expression and examines human concerns as they are revealed in art. (HU-262A) ♪

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## AUTOMOTIVE TECHNOLOGY

**AUT139-C Basic Welding Theory and Applications** 1  
This course is designed to introduce you 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. (WE-180C)

**AUT168-C Automotive Engine Repair** 8  
This course provides the knowledge and application required to maintain, service, repair, and rebuild the internal combustion engine through classroom, lecture, demonstration, and lab work. (MC-123C)

**AUT250-C Automotive Drive Trains** 7  
Emphasis in this course is placed on the theory and practical application of diagnosing and repairing automotive drive train components to include differentials, transfer case, manual transmissions, drive shafts, and clutch systems. Study also includes automotive transmissions of the late model front wheel drive vehicles. (MC-216C)

**AUT637-C Automotive Electronics** 7  
In this course electrical fundamentals are applied to semiconductor devices and microprocessors. 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, and interior accessories. **Prerequisite:** AUT638-C. (MC-112C)

**AUT638-C Automotive Electricity** 8  
This is a course of both theory and application of the fundamentals of basic automotive electricity, batteries, starting and charging systems, and an introduction to the accessories. (MC-111C)

**AUT707-C Automotive Heating and Air Conditioning** 7  
This course is designed to provide skills in repairing automotive heating and air conditioning systems. A/C system diagnosis and service procedures are covered. You will be able to troubleshoot, purge, evacuate, and recharge the automobile air conditioning system and test electrical controls for the systems after completing the course. **Corequisite:** AUT139-C. (MC-115C)



**AUT809-C Automotive Engine Performance** 8  
An automotive engine must have the correct air, fuel, and ignition to perform properly. This course will provide the knowledge and experience to restore 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. (MC-113C)

**AUT814-C Automotive Engine Performance II** 8  
Emphasis of this course is placed on the technical knowledge and hands-on application needed to restore engine performance on vehicles which use computers and microprocessors to control engine functions. **Prerequisites:** AUT637-C, AUT809-C. (MC-213C)

**AUT860-C Brakes and Transmission Electronics** 6  
Course coverage includes ABS brakes, traction control, and transmission electronics. Both theory and hands-on training are used to provide an understanding of these sophisticated modern systems. **Prerequisites:** AUT638-C, AUT861-C, AUT637-C, AUT250-C. (MC-244C)

AUT861-C Brakes and Chassis Systems	8	AUT911-C Cooperative/Internship	6
<p>This course covers the theory and application of repair to the “under car.” Theory topics include basic hydraulics, disc and drum brake operation and service, anti-lock brake applications, wheel balance, wheel alignment, suspension types and steering systems. Theory is backed by the application of repair operations in the auto lab utilizing equipment and procedures closely parallel to the auto service industry. (MC-117C)</p>		<p>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. <b>Prerequisites: AUT638-C, AUT168-C, AUT707-C, AUT861-C. In order to participate in this course a student must have a valid drivers license and have a cumulative grade point of 2.0.</b> (MC-251C)</p>	

## BUSINESS COMPUTER APPLICATIONS

BCA102-A Introduction to Technology	1	BCA194-C Word and Information Processing I	3
<p>This class offers students the opportunity to learn basic computer skills through a hands-on approach and to explore other forms of technology used in the workplace. Students will learn basic computer terminology, software packages, email, internet usage, and other technical devices in the workplace. No prior computer knowledge or usage is assumed. (CS-110A)</p>		<p>Word and Information Processing I is an introduction to word and information processing. Students will be prepared for their role in the automated electronic office by gaining a thorough understanding of word and information technology, computer concepts, terminology, procedures, techniques and applications software. (BU-121C)</p>	
BCA104-E Management of Information Systems	2	BCA195-C Word and Information Processing II	3
<p>This course has specific applications to the Health Information Technology field. The course provides a basic knowledge of computer and communication systems and how they relate to managing information for healthcare, business, and personal use. Subjects covered include computer technology development, hardware, software and its applications, data processing, operating systems, information system management, design and analysis, system security and safety, privacy and confidentiality of electronically stored data, and an overview of programming languages. Topics include networking, Internet, microwave and satellite systems, telecommunications, video, and more. (CS-151E)</p>		<p>This course, a continuation of Word and Information Processing I, is designed to provide students with additional knowledge of word and information processing, computer concepts, presentation graphics and software application for the modern electronic office. Students will prepare a variety of documents and master specialized word processing software functions. Using presentation graphics software, students will also create interactive presentations. <b>Prerequisite: BCA194-C.</b> (BU-123C)</p>	
BCA116-E Introduction to the Internet	3	BCA196-C Word and Information Processing III	3
<p>The course provides the student with an understanding of the history of the Internet, Internet terminology, and how to efficiently use the Internet resources available. Topics covered are: communicating over the Internet, how to find information, how to create web pages, and how to use multimedia on the Internet. (CS-141E)</p>		<p>Designed to present additional concepts of word/information processing, Word and Information Processing III laboratory applications include an in-depth coverage of spreadsheet terminology, functions, formulas, financial analysis, input technologies, charting features, and templates along with an introduction to basic machine transcription of practical office documents. <b>Prerequisite: BCA195-C.</b> (BU-125C)</p>	
BCA129-A Basic Word Processing	3	BCA197-C Word and Information Processing IV	3
<p>This is a course designed to provide the essentials of word processing. This course includes learning the operation of the Microsoft Word XP application program from beginning features through advanced features. At the conclusion of the course, the student would be prepared to sit for the Microsoft Word Certification exam. <b>Prerequisite: basic computer knowledge.</b> (CS-112A) </p>		<p>Designed to present additional concepts of word/information processing, this course will provide training in the concepts and techniques of database management. Using relational database software for business applications, students will create and manipulate data files and format output as tables, queries, forms, and reports. Advanced database topics include creating an application system using macros and wizards. This course also includes intermediate machine transcription of realistic documents from various fields of employment. <b>Prerequisite: BCA196-C.</b> (BU-127C)</p>	
BCA147-E Basic Spreadsheets	2	BCA214-A Advanced Computer Business Applications	3
<p>To aid in successfully completing this course, you must have access to the Microsoft Office Suite, preferably the Office 2003 version. MSOffice 98, MSOffice 2000, MSOffice XP (2002) may be utilized, but you will note differences between the Office XP text explanations, diagrams and the screen options available in your version. Test vocabulary and questions are based on MSOffice 2003 version. (CS-122E)</p>		<p>Intermediate and Advanced software applications utilizing the Microsoft 2003 Suite (Word, Excel, Access, and PowerPoint) to create documents, worksheets, databases, and presentations suitable for coursework, professional purposes, and personal use. (CS-221A) </p>	
BCA191-C Computer Applications	2		
<p>This course is designed specifically for the student with little or no computer literacy. Emphasis will be placed on developing key-boarding skills, loading, and formatting disks. In addition, you will have an opportunity to work with a variety of basic software packages. (CS-131C)</p>			

BCA216-E Intro to Microsoft Office Applications 4

In this course, students will study the materials to reach the specialist-level in Word and will begin the specialist-level in Excel. Instruction is tailored to provide Microsoft Office Specialist (MOS) certification training. (CS-106E)

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 Excel, the specialist-level in PowerPoint, and the core-level in Access. Specialized software and training will assist students preparing for Microsoft Office Specialist (MOS) certification. **Prerequisite:** BCA216-E. (CS-124E)

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. (CS-161E)

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## BIOLOGY

BIO050-H Intro to Biology I 2

Intro to Biology I is a comprehensive study of the nature of living things. Characteristics, processes, and needs of simple organisms, plants, invertebrates, and vertebrates are presented through ample use of colorful diagrams and illustrations. Whenever possible, complex biological concepts and processes are simplified by the use of analogies and concrete examples. Critical thinking skills are emphasized. (SC-020H)

BIO051-H Intro to Biology II 2

This is a continuation of Intro to Biology I and focuses on the study of human biology and human health. Also included in the content are discussions on genetics, heredity, and ecology. The use of analogies and concrete examples simplifies the presentation of complex biological concepts and processes. Critical thinking skills are emphasized. (SC-021H)

BIO060-H Intro to Anatomy and Physiology I 3

This course covers the structure and function of cells and tissues. It introduces membranes as organs, the integumentary system, the skeletal system, and the muscular system. (SC-048H)

BIO061-H Intro to Anatomy & Physiology II 3

This is a continuation of Introduction to Anatomy & Physiology I and covers the nervous, endocrine, digestive, respiratory, circulatory, lymphatic, reproductive, and urinary systems. It also covers the early growth and development of the fetus. (SC-049H)

BIO102-A Introductory Biology 3

This is an introductory biology course designed for non-science majors. Major topics of study will include cell structure and function, cellular chemistry, inheritance, and evolution. **Corequisite:** BIO103-A. (SC-121A)

BIO103-A Introductory Biology Lab 1  
**Corequisite:** BIO102-A. (SC-122A)

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 human interaction 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. (SC-120A) ~t

BIO106-A Introductory Biology II 3

This course is a continuation of Introductory Biology I. The major topics to study include human anatomy and physiology, reproduction, plant biology, and ecology. **Prerequisite:** BIO102-A; **Corequisite:** BIO107-A. (SC-123A)

BIO107-A Introductory Biology II Lab 1  
**Prerequisite:** BIO103-A; **Corequisite:** BIO106-A. (SC-124A)

BIO128-A Animal Biology 3

This course is an introduction to various vertebrate and invertebrate animals including aspects of anatomy, physiology, morphology, natural history, and evolution. **Recommended Prerequisite:** BIO102-A **Corequisite:** BIO129-A. (SC-231A)

BIO129-A Animal Biology Lab I 1  
**Corequisite:** BIO128-A. (SC-232A)

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. (SC-241A)

BIO134-A Ecology Lab 1  
**Corequisite:** BIO133-A. (SC-242A)



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. (SC-161A)
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. <b>Corequisite:</b> BIO155-A. (SC-128A)
BIO155-A Human Biology Lab	1	<b>Corequisite:</b> BIO154-A. (SC-129A)
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. <b>Corequisite:</b> BIO167-A. (SC-151A)
BIO167-A Human Anatomy and Physiology I Lab	1	<b>Corequisite:</b> BIO165-A. (SC-152A)
BIO168-A Human Anatomy and Physiology I W/ Lab	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. (SC-155A) ☞
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 digestive, endocrine, circulatory, lymphatic, respiratory, urinary, and reproductive system. <b>Prerequisite:</b> BIO165-A, <b>Corequisite:</b> BIO172-A. (SC-153A)
BIO172-A Human Anatomy and Physiology II Lab	1	<b>Prerequisite:</b> BIO167-A; <b>Corequisite:</b> BIO170-A. (SC-154A)
BIO173-A Human Anatomy and Physiology II W/ Lab	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. (SC-156A) ☞
BIO177-A Human Anatomy	4	This course covers the structure and function of the human body, with emphasis on structure. The cell and all body systems are included. Includes lecture and laboratory. (SC-163A) ☆
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. <b>Corequisite:</b> BIO184-A. (SC-131A)
BIO184-A Microbiology Lab	1	<b>Corequisite:</b> BIO183-A. (SC-132A)
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. <b>Prerequisite:</b> BIO165-A; <b>Corequisite:</b> BIO170-A. (SC-171E)

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## BUSINESS

BUS102-A Intro to Business	3	This course introduces you to American contemporary business, its nature, and environment. This survey course provides you with exposure to social responsibilities of business, management, production, human resources, marketing, finance, quantitative methods, world business, and business law. (BU-110A) ☆
BUS110-A Business Math and Calculator	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. (MA-107A) ☞
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, and insurance are covered. (BU150C)
BUS128-A Foundation to Entrepreneurship	3	Introduction 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. (BU-125A) ☞

**BUS130-A Intro 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. *(BU-121A)* ☆

**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 150 hours, maintain a journal of your experience, and develop a Business Review with recommendations on how the venture could become even more effective. *(BU-122E)*

**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. *(BU-270A)* ☆

**BUS154-A E-Business** 3  
E-Business will cover the unique aspects of creating a business strategy in the e-business environment and will focus on the Internet as a medium for promotion and distribution. E-Business will discuss how traditional marketing and business arenas can be transformed in this environment. *(BU-201A)* ☆

**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. *(BU-151A)* ♻️

**BUS163-A Interpersonal Skills at Work** 2  
Interpersonal Skills at Work 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. *(EN-115A)* ♻️

**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. *(BU-111A)* ☆

**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.** *(BU-112A)* ☆

**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. *(BU-231A)* ☆

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

**BUS212-A Business Statistics II** 3  
This is a 3-credit hour course designed develop the understanding of applications of statistics in a business context and use of computer software for statistics. *(BU-154A) (MA-154A)* ☆

**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 the business curriculum including accounting, management, marketing, information technology, e-commerce and office systems through the development of a business strategy and implementation. *(BU-142A)* ♻️

**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. *(BU-283A)*

**BUS255-A Real Estate Prelicensure** 3  
This course is designed to meet the requirements of the Iowa Real Estate Commission to prepare for the Real Estate Salesperson Prelicense Exam. *(BU-291A)*

**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. *(BU-140A)* ☆

**BUS268-A Life Insurance and Financial Planning** 3  
The focus of this course is on life insurance choices and comparisons, the legal framework of life insurance, premium options, and reserves. Particular emphasis is given to the concept of utilizing life insurance as a significant cornerstone of the financial planning process. *(BU-281A)* ☆

## COMPUTER AIDED DRAFTING

- CAD107-E Fundamentals of CAD** 5  
This course introduces you to the fundamentals of engineering drawing using computer-aided drafting tools and techniques. You will be instructed in Lettering, Sketching, Computer fundamentals, CAD basics, and Geometric Construction. Computer fundamental topics will include computer repair and upgrades, computer operations in Windows®, installing software and printers. CAD basics will include initial software configuration, drawing setup commands, title blocks, and basic drawing, editing and viewing commands. **Corequisite: MAT132-E or Math Elective. (DR-122E)**
- CAD120-E Computer Aided Drafting I** 4  
This course is a continuation of Fundamentals of Computer-Aided Drafting. CAD I builds on the foundations previously learned. Topics of study include Orthographic Projection, Threads and Fasteners, Basic Dimensioning, Sectional Views and Detail Views. You will also gain additional knowledge and experience learning drafting techniques using Computer-Aided Drafting software. CAD topics will include printing/plotting techniques, blocks and attributes, and dimension styles. **Prerequisite: CAD107-E; Corequisite: MAT132-E or instructor approval. (DR-141E)**
- CAD121-E Computer Aided Drafting II** 3  
This course continues to build on the foundation of the previous courses. Topics of study will include an extensive look at Auxiliary Views, Sub-Assemblies, Weldments and Assembly drawings. CAD topics include user customization and data extraction. **Prerequisite: CAD120-E. (DR-142E)**
- CAD122-E Computer Aided Drafting III** 4  
This course will increase your knowledge of the drafting profession by investigating specialized areas of drafting. Topics of study include developments and intersections, gear and cam drawings and electrical and hydraulic schematics. CAD topics will include an introduction to parametric modeling. **Prerequisite: CAD121-E; Corequisite: CAD230-E. (DR-143E)**
- CAD230-E Geometric Dimensioning and Tolerancing** 2  
Proper application of dimensions and tolerances is an important part of providing complete documentation of product requirements. This course will provide you with an expanded, in-depth look at dimensioning and tolerancing, as defined in the dimensioning and tolerancing standard ASME Y14.5M. The course will also include suggestions on how to apply the principles contained in the standard to situations not shown in the standard. **Prerequisite: CAD121-E; Corequisite: CAD122-E. (DR-155E)**
- CAD250-E Advanced CAD Applications** 7  
This course is the last in the series of drafting courses designed to prepare you for entry-level positions in the drafting industry. Topics of study will be repeated from the earlier courses, by using parametric modeling software. **Prerequisite: CAD122-E. (DR-172E)**

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## CHEMISTRY

- CHM050-H Intro to Chemistry I** 3  
Intro to Chemistry I is a programmed course which is designed to develop your understanding of the chemical principles introduced in a basic chemistry course. Topics covered include valence, chemical equations, acids, bases, salts, atomic weight, molecular weight, mole calculations, the atomic theory, and the metric system. (SC-026H)
- CHM051-H Intro to Chemistry II** 3  
This course is the second semester of the programmed chemistry course. Topics covered include oxidation and reduction, properties of gases, kinetic theory, liquids and solids, nuclear structure, atomic structure, chemical bonding, the periodic system, and chemical equilibrium. (SC-027H)
- CHM110-A Introduction to Chemistry** 3  
This 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, acids and bases, and major hydrocarbons. Application to living systems forms the basis of the course. **Corequisite: CHM111-A. (SC-141A) ☆**
- CHM111-A Introduction to Chemistry Lab 1**  
**Corequisite: CHM110-A. (SC-142A)**
- CHM112-A Introduction to Chemistry** 3  
No description at this time. **(Prerequisite for specific ag courses.)**
- CHM125-A Introduction to General Organic and Biological Chemistry** 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.
- CHM126-A Introduction to General Organic and Biological Chemistry Lab** 1  
**Corequisite: CHM125-A.**
- 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. (SC-219A) ♻️
- CHM152-A College Chemistry II** 4  
A continuation of CHM151, 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. **Prerequisites: Successful completion of Introduction to Chemistry I CHM151. (SC-236A) ♻️**

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.** (SC-143A)

CHM164-A General Chemistry I Lab 1  
**Corequisite: CHM163-A.** (SC-144A)

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.** (SC-145A)

CHM174-A General Chemistry II Lab 1  
**Corequisite: CHM173-A.** (SC-146A)

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## COMPUTER PROGRAMMING

CIS121-E Intro to Programming Logic 3  
The course is a comprehensive, language-independent introduction to programming 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. **Corequisite: CIS142-E.** (CS-116E)

CIS142-E Computer Science 4  
The course is an introduction to the process of program design and analysis using the C++ programming language for students who have little or no prior programming experience. Topics to be covered include basic data types, their representations, and their operators. Additional topics include selection, loops, files, arrays, strings, inheritance, classes and their methods, and data structures. **Corequisite: CIS121-E.** (CS-126E)

CIS143-E Advanced Computer Science 4  
This course is an introduction to the process of program design and analysis using the Java programming language for students with some prior programming experience. It is designed to expand students' knowledge of computer science and sharpen their programming skills. Topics to be covered include an overview of fundamental programming concepts using Java as well as object-oriented programming techniques, classes, inheritance, graphical user interfaces, layout managers and event and exception handlers. **Prerequisite: CIS142-E.** (CS-153E)

CIS165-A Project Management Software 3  
This course provides instruction and guidelines for students who want to learn the leadership, motivation, communication, conflict resolution and organizational skills necessary to become a project leader. Microsoft Project software will be used to teach students how to track a project's progress and how to manage project resources. (BU-221A)

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. (CS-163E)

CIS173-E C# Programming 4  
This courses presents advanced object oriented concepts including inheritance, polymorphism, modularization, structure, and debugging. It includes the syntax and use of the C# language. Included are complex mathematical calculations, use of decisions, loops, arrays, classes, collections, keyboard and mouse events, menus, dialogs, string processing, sequential file access, connection to databases, web services, and exception handling. **Prerequisite: CIS143-E.** (CS-252E)

CIS176-E Advanced Java 4  
This course will build on the first Java course with advanced topics. Students will learn to use control structures, arrays, graphics, and Graphical User Interfaces. Additionally, modularization, recursion, exception handling, file streams, data structures, and sockets and networking will be presented. **Prerequisite: CIS143-E.** (CS-247E)

CIS207-A Fundamentals of Web Programming 3  
This course uses Hyper-Text Markup Language (HTML) to create custom web pages. The course will include the integration of graphics, sound, animation, and other multimedia into web sites. Topics will include working with text, graphics, links, navigation, tables, forms, layers, and frames. Students will learn to add interactivity with behaviors and styles. They will learn the elements on and effective web site and how to manage their files on a web server. **Prerequisite: CSC110A.** (CS-150A) ☆

CIS219-E Database-Driven Web Sites 4  
This course will combine the skills of graphics, relational databases, and web design from previous courses to build dynamic web sites. Both client-side and server-side scripts will be covered as well as SQL based queries and database connections. The course will culminate in the addition of E-Commerce capabilities to the site with an emphasis on security. **Prerequisite: CIS207-A, CIS303-E.** (CS249E)

CIS303-E Intro to Data Base 3  
This course covers the fundamental topics of Database Management Systems. Students will learn creation, modification, and maintenance of database structures. They will build and optimize customized tables, queries, forms, and reports. Additionally they will learn to integrate their databases with the web and other applications. Students will also learn how to customize their database with SQL, switchboards, and macros. (CS-115E)

CIS605-E Visual Basic 4  
This course is an introduction to Visual Basic using Object Oriented programming skills. Students will learn the fundamentals of programming, how to communicate using menus, controls and dialog boxes, data types, and how to interface with the Windows operating systems. The course will include programming with graphic controls and simple animation, sounds, and other multimedia file methods. **Prerequisite:** CIS142-E. (CS-248E)

CIS613-E Advanced Visual Basic 4  
This course is an extension of Visual Basic programming using Object Oriented programming skills. Students will learn the advance topics of building classes, inheritance, file access, database connectivity, and three tiered network applications. **Prerequisite:** CIS605-E. (CS-250E)

CIS650-E Operating Systems Support 3  
This course is designed to go hand-in-hand with NET102-E Computer Architecture. The course maps to the objectives for the Microsoft Certified Desktop Support Technician certification. Topics will include installing and troubleshooting the operating system, upgrading from previous versions, troubleshooting system startup problems and user logon problems. Additional topics will include security settings, storage and display devices, system performance analysis, and remote connectivity. **Prerequisite:** NET102-E. (CS-250E)

CIS651-E User Software Support 4  
Students will learn user support concepts in computer technology. The course maps to the objectives for the Microsoft Certified Desktop Support Technician certification. Students will focus on User Software customization by configuring and troubleshooting Internet and productivity applications. Additionally, they will learn to resolve file and folder issues, configure security applications, and keep all applications updated. **Prerequisite:** CIS650-E. (CS-254E)

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## CULTURAL STUDIES

CLS164-A Japanese History & Culture 3  
This course is designed to provide you with a background on the Japanese people, their society, political system, and business organization. Also covered in this course are the physiological makeup of Japan, its agriculture and natural resources, the historical background, and its role as a vital player in modern day international trade. (HU-246A)

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## COMMUNICATION

COM710-C Basic Communications 3  
Grammar, vocabulary, writing, and editing are the focus of this course. Instructional methodology incorporates a team approach. In addition, the methodology provides an opportunity for students to practice effective speaking and human relations skills. Writing projects require the use of a word processing program; therefore, keyboarding skills are beneficial. **Recommended Keyboarding/Typing.** (EN-121C)

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. (EN-107E)

COM741-E Oral Communications 3  
This course is designed to improve self-expression and give you confidence in communicating ideas. Exercises will include public speaking, listening, speech analysis, demonstration, group discussion, and vocabulary improvement. (EN-105E)

COM753-E Technical Communications 3  
This course is designed to prepare students for the oral and written communication situations in the working world. The major areas of study include technical communication principles, oral communications, composing technical documents, and using standard English. Writing projects require the use of a word processing program; therefore, computer experience is beneficial. (EN-125E)

## CONSTRUCTION

- CON113-C Construction Print Reading 2  
The fundamentals of residential and commercial blueprint reading and interpretation are taught. In addition, basic concepts of floor plan design and details will be addressed. (DR-135C)
- CON118-C Basic Equip. and Materials 2  
The proper maintenance and safe use of carpentry hand and power tools, equipment, and OSHA-related safety issues are stressed. Additional skills and knowledge in measuring and materials typical of the carpentry industry are covered. **Corequisite:** CON119-C. (CO-105C)
- CON119-C Basic Equipment and Materials Lab 2  
This course provides applications on use, maintenance and safety practices of appropriate hand and portable power tools and power equipment through instructor-assigned projects and assignments. **Corequisite:** CON118-C. (CO-106C)
- CON126-E Drafting/Sketching 2  
This course introduces the student to the principles of drafting and sketching. The student will do basic drawing and sketching needed to represent construction details and also will draw various room additions, garages and smaller house floor plans. This course will give the student the necessary background needed for residential design. (DR-141C)
- CON140-C Carpentry Fundamentals 3  
This course is intended for part-time students not yet certain whether they wish to pursue a career in the construction industry. This course will expose you to the basics of residential construction. You will perform basic carpentry tasks involved in the building of a house with emphasis on floor, wall, and roof framing. Application of sheathing, shingles, and insulation are also included. (CO-101C)
- CON142-C Principles of Carpentry I 3  
Terms and installation methods associated with various systems of floors, walls, roof framing, roofing materials, window and skylights, material estimating and energy-efficient building systems are studied in this course. **Corequisite:** CON153-C. (CO-115C)
- CON143-C Principles of Carpentry II 3  
The theory of building insulation, air and vapor barriers, drywall installation, finishing and interior-finish carpentry and door installation are studied. Conventional roof framing, stairs, and basic cabinet construction are covered. **Prerequisite:** CON142-C; **Corequisite:** CON154-C. (CO-125C)
- CON152-C Carpentry Lab I 3  
Proper use, safety, maintenance and sharpening of tools are stressed in this course. The student will demonstrate correct tool and equipment usage by completing a variety of operations and projects. (CO-116C)
- CON153-C Carpentry Lab II 6  
Actual trade experience is received in floor framing, exterior wall framing, roof framing and shingling. Other hands-on skills include window and patio door installation, various insulation techniques, use and function of vapor barriers, and interior framing techniques. Accuracy, craftsmanship, speed and efficiency are stressed. **Prerequisite:** CO152-C; **Corequisite:** CON142-C. (CO-126C)
- CON154-C Carpentry Lab III 9  
The installation of insulation, air and vapor barrier, drywall, taping and texturing, doors and interior trim are included in this course. In addition, students will build conventional framed roofs and complete projects in stair construction. Stick built roofing, preparation of floors for various finishes, cabinet and countertop installation, siding types and installation, site layout and transit use are emphasized in this course. **Prerequisite:** CON153-C; **Corequisite:** CON143-C. (CO-130C)
- CON174-C Residential and Computer Design 6  
This course will introduce the student to the hand board drawing of floor plans, wall sections, stairs, cabinet layout and other framing components. Next the student will use computer aided drafting based on an architectural design software program to draw components, walls, joist beams, etc. Finally, the student will draw a complete house plan with all of the elevations, cross sections, and 3D images associated with the house's floor plan using the computer aided drafting system. **Prerequisite:** CON126-C; **Corequisite:** CON177-C. (CO-140C)
- CON177-C Construction Costs and Estimates 5  
The student will learn to develop a logical flow in estimation and understand the management objectives that need to be accomplished with an estimate. In addition, they will gain knowledge of the language and terms used within the industry, as well as symbols and abbreviations found in home plans and the conversions still required to complete an estimate through critical thinking. The course also focuses on the use of estimating software for material costs, labor costs and time tracking. **Prerequisite:** CON143-C; **Corequisite:** CON174-C. (CO-141C)
- CON360-C Supervisory Applications I 2  
The purpose of this course is to provide the student with the opportunity to build upon the technical expertise developed in other Construction Technology courses and managerial/supervisory theory courses and learn how these skills apply in an actual on-the-job experience with a supervisory mentorship. The student will be placed with a mentor who will allow the student to learn about and practice specific skills relating to the supervision of employees. As a result of actively partnering with a mentor the successful student will be able to develop an awareness and working knowledge of various supervisory techniques and build confidence in applying those techniques in supervisory situations. **Prerequisite:** CON805-C. (CO-121C)
- CON362-C Supervisory Applications II 2  
This course builds upon the experiences gained in Supervisory Applications I and expands the student's experience enabling the successful student to:  
1. Analyze and prescribe solutions to supervisory problems.  
2. Describe the role, nature, tasks and obligations involved in the job of supervision.  
3. Assess personal abilities and skills needed and possessed for the job of supervision.  
A final paper will be required of each student describing and summarizing their experience. **Prerequisite:** CON360-C. (CO-122C)
- CON805-C Carpentry Coop 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. The student will find a position and contract his or her services for the summer term. With proper documentation and the evaluation of the student by the employer, credits will be given toward a Carpentry Diploma and/or a Construction Technology AAS Degree. **Prerequisites:** CON143-C, CON154-C. (CO-135C)

## CRIMINAL JUSTICE

CRJ120-A Introduction to Corrections 3  
This course presents the development of correctional theory, the correctional client, trial sentencing and institutions involved, and the rehabilitation potential through probation and parole. (HU-103A) <sup>u</sup>

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. (SS-246A) <sup>u</sup>

CRJ201-A Juvenile Delinquency 3  
Juvenile Delinquency studies the theories of delinquency causation and recent research. This course focuses on delinquent behavior and law enforcement as related to the modern social institutions in American culture. Students explore societal reactions to the problem of juvenile crime and analyze the history and the functions of the juvenile court. (HU-104A) <sup>u</sup>

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## COLLISION REPAIR & REFINISH

CRR050-H Intro to Auto Body 3  
This course is exploratory in nature. Students will be introduced to a variety of skills used in the auto body industry. Lab projects in welding, dent removal, and painting will give the student an opportunity to experience first hand the applications of these skills.

CRR110-C Auto Body Welding 3  
This course provides to you a working knowledge of oxyacetylene welding and cutting, Gas Metal Arc Welding (GMAW), Squeeze Type Resistance Spot Welding (STRSW), airless plastic welding, and plasma arc cutting. You will perform the welding techniques for mild steel, high strength steel, galvanized steel, aluminum, and selected plastics. (WE-141C)

CRR407-C Exterior Body Construction 7  
This course covers all the steps to cosmetic repair of an automobile. Cleaning the vehicle, damage analysis, replacing trim and hardware components, repairing damaged sheet metal, and preparation for painting are included. Safety and proper use of hand and power tools are practiced. **Prerequisite:** CRR110-C. (AB-143C)

CRR450-C Glass Service 2  
This course covers current procedures for removing and installing automotive stationary and moveable glass components in both late model vehicles as well as older model vehicles. Water leak and wind noise diagnosis and repair procedures will also be discussed. (AB-142C)

CRR502-C Frame Damage Analysis 2  
This course covers structural misalignment on late model uni-body vehicles. Repair methods and decisions for replacing structural components are emphasized. Laser technology and computer enhancement are some of the techniques used during repair applications. (AB-149C)

CRR537-C Structural Repair 7  
This course covers procedures for repairing and/or replacing structural components of an automobile. Replacing bolted, welded, and bonded panels while maintaining structural integrity is the focus of the course. Proper sectioning of structural parts is also discussed. **Prerequisite:** CRR110-C, CRR502-C. (AB-151C)

CRR577-C Advanced Structural Repair 9  
This is a continuation of Structural Repair. Actual collision damaged vehicles are repaired using industry standards. You will perform total repair processes, from the appraisal to the final delivery of the vehicle. **Prerequisite:** CRR537-C.

CRR602-C Mechanical Repairs 2  
Designed for the Auto Body student, this course provides you with an overview of mechanical systems that may become damaged during a collision. Electrical systems, heating and air-conditioning systems, and steering and suspension systems are the focus of discussion. Limited application of repair procedures for these systems is included. (AB-155C)

CRR741-C Estimating v2 2  
This introduction to estimating vehicle repair damage covering pricing, insurance, financing, and hidden pitfalls to avoid in becoming an appraisal estimator. (AB-131C)

CRR810-C Automotive Refinishing I 4  
This is an introductory course in the safe handling of automotive refinishing materials and the use of application equipment. Techniques for proper application of undercoats, topcoats, and tri-stage materials will be practiced. Paint chemistry and methods for spot and panel repairs will be emphasized. (AB-145C)

CRR840-C Automotive Refinishing II 4  
Automotive Refinishing II focuses on techniques of tinting and color matching of topcoat products, the use of color matching equipment, and the application of a topcoat for overall refinishing on an automobile. **Prerequisite:** CRR810-C. (AB-147C)

## 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. (CS-121A) ☆

**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. (CS132A)

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## FILM AND THEATRE

**DRA101-A Introduction to Theater** 3  
Introduction to the 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. (HU-272A) ☆

**DRA158-A Set Design & Construction** 1  
Emphasis will be placed upon sets and set pieces for amateur productions. Emphasis will be on the practical. Sets built from materials readily available in the community will be highlighted. Sets for the proscenium stage as well as theater in the round will be approached. Traditional flats, Hollywood flats and special window and door flats will be explained. This will be a hands on workshop. Flats will be built as a cooperative class project. (HU-160A)

**DRA159-A Set Design & Construction** 2  
Emphasis will be placed upon sets and set pieces for amateur productions. Emphasis will be on the practical. Sets built from materials readily available in the community will be highlighted. Sets for the proscenium stage as well as the theater in the round will be approached. Traditional flats, Hollywood flats and special window and door flats will be explained. This will be a hands on workshop. Flats will be built as a cooperative class project. (Approximately 30 hours design and construction of sets for the community theatre production and Sheldon high school summer theatre productions will be a part of the class.) (HU-161A)

**DRA165-A Set Design & Construction** 3  
Emphasis will be placed upon sets and set pieces for amateur productions. Emphasis will be on the practical. Sets built from materials readily available in the community will be highlighted. Sets for the proscenium stage as well as the theater in the round will be approached. Traditional flats, Hollywood flats and special window and door flats will be explained. This will be a hands on workshop. Flats will be built as a cooperative class project. (Approximately 60 hours design and construction of sets for the community theatre production and Sheldon high school summer theatre productions will be a part of the class.) (HU-162A)

**DRA182-A Stage Makeup** 1  
Emphasis will be placed on stage makeup for amateur productions. Straight makeup, character makeup, old age makeup and special makeup effects will be covered. This will be a hands-on workshop. Each student will be required to do four to six makeup applications in class. (HU-179A)

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## DIESEL

**DSL352-C Intro to Diesel Engines** 2  
This course begins with diesel engine design and theory. Included are disassembly, inspection, and reassembly of the engine and its components. Special attention will be given to diesel engine systems troubleshooting, parts failure analysis, and fuel systems. **Prerequisites:** AUT809-C, AUT168-C; **Corequisite:** DSL801-C and DSL810-C. (MC-261C)

**DSL402-C Diesel Engine Electronics I** 2  
The purpose of this course is to familiarize you with the components and controls of electronically controlled diesel engines. You will study electronic control modules (ECM), sensors, and electronic unit injectors (EUI). This course concentrates on theory, troubleshooting, repair, and parameter changes of electronic controlled systems. **Prerequisites:** AUT638-C, DSL352-C; **Corequisite:** DSL820-C. (MC-271C)

**DSL412-C Diesel Engine Electronics II** 2  
This course continues the study of electronic controls and diesel engines of major manufacturers. Emphasis is on troubleshooting and controls, diesel engines, and fuel systems. **Prerequisite:** DSL402-C; **Corequisite:** DSL824-C. (MC-273C)

**DSL591-C Power Trains and Suspension** 1  
This course is designed to provide the necessary knowledge required to be able to identify, service, troubleshoot, remove, disassemble, inspect, reassemble, and install rear axle assemblies, transmissions, and suspensions. Lubrication, manual and remote controls, failure analysis, and parts evaluation are included. **Prerequisite:** DSL801-C; **Corequisite:** DSL820-C. (MC-243C)



DSL601-C Hydraulics	1	DSL810-C Truck and Diesel Lab I	10
This course provides you with a basic understanding of fluid power as used in construction, agriculture, and the trucking industry. <b>Corequisite:</b> DSL820-C. (MC-249C)		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. <b>Prerequisites:</b> AUT638-C, AUT809-C, AUT168-C; <b>Corequisites:</b> DSL801-C, DSL631-C, DSL352-C. (MC-262C)	
DSL631-C Air Systems and Brakes	1	DSL820-C Truck and Diesel Lab II	10
This course covers the operation and repair of the complete air systems and brakes including antilock and traction control systems used on trucks and trailers. The regulation of the air brake safety standards set by the D.O.T. are included. <b>Prerequisite:</b> AUT861-C; <b>Corequisite:</b> DSL810-C. (MC-245C)		This is a continuation of Truck and Diesel Lab I. You perform repairs and troubleshooting as required in an actual work situation. <b>Prerequisite:</b> DSL810-C; <b>Corequisites:</b> DSL591-C, DSL601-C, DSL402-C. (MC-263C)	
DSL801-C Truck and Trailer Service	1	DSL824-C Truck and Diesel Lab III	4
This is a theory course designed to acquaint you with maintenance of trucks and trailers. The course includes lubrication, preventive maintenance inspection, federal inspection, adjustments, and basic fuel and brake systems on trucks and trailers. <b>Prerequisite:</b> AUT168-C; <b>Corequisite:</b> DSL810-C. (MC-233C)		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. <b>Prerequisite:</b> DSL820-C; <b>Corequisite:</b> DSL412-C. (MC-264C)	

## EARLY CHILDHOOD EDUCATION

ECE103-A Introduction to Early Childhood Education	3	ECE243-A Early Childhood Guidance	3
This course is designed to give student 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. (ED-110A) ☞		In this course you will study behavioral principles applicable to children, appropriate methods of discipline, and various guidance techniques that may be used with children. ☞	
ECE222-A Infant/Toddler/School Age	3	ECE287-A Exceptional Learner	3
The study of programs, curriculum and care of children from birth to 36 months as well as before and after school programs for school-age children are covered in this course. (ED-151A) ☞		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. (ED-152A) ☞	

## ECONOMICS

ECN110-E Introduction to Economics	3	ECN120-A Principles of Macroeconomics	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. (SS-105E)		This course is an introduction to basic macroeconomic 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. (SS-101A) ☆	
		ECN130-A Principles of Microeconomics	3
		This course is an introduction to basic microeconomic 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. (SS-102A) ☆	

## EDUCATION

EDU150-A Directed Observation	1	EDU218-A Initial Field Experience	2
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. <b>Prerequisite:</b> EDU210-A. (ED-140A)		This course is designed to provide experience in a live classroom to observe the way schools work, the role and responsibility of the teacher, and student behavior, and to increase the student's understanding of the teaching-learning process. Students will record experiences in a journal format as part of their portfolio. (ED-142A) ☞	
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. (ED-201A) ☆			

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. (ED-215A) ☆

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. **Prerequisite:** EDU210-A and EDU150-A. (ED-240A) ☆

EDU235-A Children's Literature 3  
This course teaches the criteria for choosing the best children's literature and applies that criteria to evaluating materials to be used in the classroom. (ED-220A) ☆

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. (ED-114A) ☆

EDU255-A Technology in the Classroom 3  
This course is designed for students planning to become teachers and focuses on using technology to promote learning in the classroom. A variety of topics will be covered including: computer conferencing, videoconferencing, real-time chatting, computer-based simulations, educational Websites and software, hypermedia, multimedia, PowerPoint, and ELMOs. (ED-210A) ☆

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## 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. (DR-130C)

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. (EL-107C)

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. (EL-100E)

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. (EL-103E)

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. (EL-110C)

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. (EL-114C)

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. (EL-103C)

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. (EL-109C)

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:** ELT113-E; **Corequisite:** ELE300-C. (EL201C)

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 and ELE161-C. (EL-222C)

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. (EL-219C)

ELE190-C Relay Logic 3  
This course is designed to give you an awareness of all phases of machine control including various types of motors and control circuitry. Hands-on instruction in circuit design through ladder diagram construction and applications through relay logic is covered. **Prerequisite:** ELT113-E. (EL-187C)

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. **Prerequisite:** ELE121-E and ELE161-C. (EL-223C)

ELE196-C Motor Control Principles 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, reduced voltage starters, and control of electro-pneumatic devices. It is designed to provide hands-on training using industrial control equipment. **Prerequisites:** ELE121-E and ELE161-C. (EL-229C)

ELE210-C Programmable Controllers 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, interfacing electro-pneumatic devices, programming timers, counters, and math functions. The course is designed for individuals having an electrical background. **Prerequisite:** ELE196-C. (EL-228C)

ELE220-C Application of PLC's 6  
This course will continue where Programmable Controllers ended. Coverage will include electrical safety, PLC timers, PLC counters, interfacing electro-pneumatic devices, math functions, analog devices, graphical interfaces, industrial networks and Man Machine Interface software. Primary concern will be the application of equipment used in the process control industry. **Prerequisite:** ELE210-C. (EL-259C)

ELE270-C Co-op 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. (EL-173C)

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## 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. **Prerequisite:** ELE121-E and MAT106-E. (ET-150E)

ELT113-E Electronics I 9  
Electronics I is an introductory course in DC theory, AC theory, and semi-conductor diode theory. You will develop an understanding of various pieces of test equipment and how different electronic components react to alternating and direct current. You will also learn to mathematically analyze circuits to predict circuit responses. **Corequisite:** MAT123-E or equivalent. (ET-101E)

ELT114-E Electronics II 5  
This course develops the basic concepts for working with discrete electronic components and linear integrated circuits. You will develop an understanding of the various electronic components and how to use these components in various circuits. Also, you will develop a systematic approach to troubleshooting, analyzing, and repairing different electronic circuits. **Prerequisites:** ELT113-E, MAT123-E or equivalent; **Corequisite:** MAT124-E or equivalent. (ET-108E)

ELT156-E Industrial Electronics 5  
This course develops basic concepts for working with electronic components used in industrial-type circuits. You will develop an understanding of SCRs (Silicon Controlled Rectifier), triacs, opto isolators, photo electronic devices, UJT's (Uni-Junction Transistors), three-phase rectifiers, and basic motor drives. **Prerequisite:** ELT114-E or ELT112-E. (ET-120E)

ELT191-C PC Fundamentals/CAD for Technicians 4  
This course will provide an overview of how computers work. Hands-on labs will include performing reinstallation of an operating system and identifying computer components. Accessing servers and installing networked devices, such as printers/plotters, will be reviewed. You will review creating documents in Microsoft Word and Excel. These computer skills will be integrated into the CAD portion of the course, which introduces you to AutoCAD, where you will learn how to setup, draw, edit and plot drawings. You will learn the skills necessary to create computer-aided drawings of orthographic views, electrical, electronic and instrumentation diagrams. (ET-105C)

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. (CS-119E)

ELT260-E Advanced PLC's	8	This course will cover the major components of a programmable logic control system: electrical safety, PLC hardware, interfacing input-output devices, interfacing electro-pneumatic devices, programming timers, counters, math functions, analog devices, graphical interfaces, industrial networks, and Man Machine Interface software. Primary concern will be the application of equipment used in the process control industry. <b>Prerequisite:</b> ELE190-C. (ET-230E)	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. <b>Prerequisite:</b> ELT327-E. (ET-228E)
ELT300-C Industrial National Electric Code	2	Industrial National Electric Code (NEC) prepares the technician for interpreting the requirements for installation of electrical equipment and materials associated with the power and control of machines and processes. Today's industries present a wide range of environments for electrical applications requiring the technician to be able to properly apply the standards set forth in the NEC. <b>Prerequisite:</b> ELT113-E. (ET-110C)	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. <b>Prerequisite:</b> ELT645-E. <b>Corequisite:</b> ELT260-E. (ET-250E)
ELT327-E Digital Electronics	4	This course presents logic circuits as building blocks for control and instrumentation circuitry. Beginning with the simplest logic circuits, the course progresses through large scale, single package integrated circuits. Electrical characteristics, integration, and timing are involved throughout the course. This course includes a final project. <b>Prerequisite:</b> ELT114-E; <b>Corequisite:</b> MAT124-E or equivalent. (ET-212E)	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. <b>Prerequisite:</b> ELT840-E. (ET-231E)
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. <b>Prerequisite:</b> ELT112-E. (ET-209E)	ELT840-E Electronics Applications	8	This course develops the basic concepts for working with electronic components used in industrial-type circuits. You will develop an understanding of SCR's (Silicon Controlled Rectifier), triacs, optoisolators, photoelectronic devices, UJT's (Uni-Junction Transistors), three-phase rectifiers, basic motor drives, industrial communications, and op amp applications. <b>Prerequisite:</b> ELT112-E. (ET-152E)
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. <b>Prerequisites:</b> ELT327-E, ELT193-E. (ET-222E)			

## EMERGENCY MEDICAL SERVICES

EMS219-A EMT Basic I	3	This section of the Emergency Medical Technician-Basic (EMT-B) 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. (HL-196A)	EMS550-A Preparatory Training for the Paramedic (Module #1)	2	This course will provide an introduction to the University of Iowa Hospital's paramedic training program and to the field of paramedics. Included with be an overview of the human systems, emergency pharmacology, and medication administration.
EMS225-A EMT Basic II	3	This section of the Emergency Medical Technician-Basic (EMT-B) 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. (HL-197A)	EMS555-A Airway Management and Ventilation (Module #2)	1	This course includes basic airway adjuncts, bag and mask ventilation, combination esophageal airways, endotracheal intubation, Sellick's maneuver and surgical airway procedures.
			EMS560-A Patient Assessment (Module #3)	1	This course will include HIPAA, skills in assessment of the patients medical history, and techniques of physical examination including on the scene assessment and assessment of life threatening and non-life threatening injuries, as well as clinical decision making.

EMS565-A Trauma (Module #4) 1  
This course includes trauma systems, mechanism of injury, hemorrhage and shock and thoracic and abdominal trauma. Students will develop skills in shock management, anti-shock garments, extrication devices, immobilization, splinting and chest needle decompression.

EMS570-A Medical Emergencies and Cardiovascular Care (Module #5) 5  
This course will cover respiratory, cardiac, diabetic, poisoning, environmental, neurological, behavioral, & gynecological emergencies.

EMS575-A Ob/Pediatrics/Geriatics (Module #6) 2  
This course will include skills development in pediatric assessment, pediatric intubation, pediatric immobilization & vascular access (IO and IV).

EMS580-A Assessment Based Management (Module #7) 1  
This course will allow students to demonstrate cognitive and psychomotor skills learned in the paramedic training in simulated emergencies situations.

EMS585-A Clinical (Module #8) 5  
Students will have the opportunity to perform both non-evasive and evasive procedures under supervision while taking part in 300 hours of training that includes both clinical experience and "ride time".

## ENGLISH COMPOSITION

ENG005-H Vocabulary 2  
This developmental course is divided into three sections which focus on word parts (prefixes, suffixes, and roots); words fundamental to comprehension of materials written at a college level; and specific academic terms often found in courses in the arts, business, science, computer science, and the humanities. (EN-021H)

ENG050-H English 2200 2  
English 2200 is a programmed course in grammar, sentence building, correct usage, and punctuation. You will read the information, respond to it, check your answer, and then proceed to another step containing another segment of information. This course lays the foundation for the necessary elements of the English language. Included are sentence formation, subject-verb agreement, pronouns, complete sentences, and capitalization. (EN-022H)

ENG051-H English 2600 2  
English 2600 is a programmed course through which you are taught some of the fundamentals of English grammar and usage. Included are simple sentences, modifiers, verb usage, capitalization, and punctuation. (EN-022H)

ENG052-H English 3200 2  
English 3200 is a programmed course in grammar, sentence-building, usage, and punctuation. Much of the text deals with sentence construction and with types of subordination. Other grammatical concepts covered include modifier placement, dangling construction, parallelism, and pronoun reference. (EN023H)

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. (EN-024H)

ENG054-H Basic Composition 3  
This course focuses on the construction of the different types of paragraphs, the development of the five-paragraph essay, and the composition of an 8 to 10-page research paper. In addition, mechanics, usage, and grammar are reviewed through daily work activities. (EN-025H)

ENG060-H Grammar Through Computer Applications 2  
This course teaches fundamental English skills including grammar, punctuation, usage, mechanics and style, while teaching basic word processing skills.

ENG105-A Composition I 3  
You will develop skills in written communication through various experiences including expository, persuasive, and research papers. Instruction will also include basic research and documentation skills. (EN-104A)☆

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.** (EN-105A) ☆

ENG108-A Composition II: Technical Writing 3  
This course is designed for students in business, technical, or science programs. Students will use critical thinking skills to analyze technical writing situations, conduct research, and apply their knowledge of technical writing style, format, and strategy to various professional writing tasks. These tasks include correspondence, reports, articles, instructions, manuals, and job search materials. **Prerequisite: ENG105-A OR a grade of "B" or higher in COM712-E or COM753-E.** (EN-106A) ☆

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. (EN-110A) ☆

ENG221-A Creative Writing 3  
In this course, you will study the elements and techniques 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.** (EN-201A) ☆

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 take a look at both 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. (EN-107A) ☆

## 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. (SC-106A) ☞

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. (SC-105A)

ENV144-A Conservation Biology 3  
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, data analysis, computer work and research. (SC-130A)

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. ☞

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## 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. (BU-282A) ☆

FIN105-A AIB Principles of Banking 2  
This course touches on nearly every aspect of banking from the fundamentals of negotiable instruments to contemporary issues and developments within the industry. This course is offered through the Continuing Education Division with a college credit option. (BU-192A)

FIN106-A AIB 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. (BU-192A)

FIN107-A AIB Law and Banking 3  
This course for bankers serves as a guide to law and legal issues with special emphasis on the Uniform Commercial Code. This course is offered through the Continuing Education Division with a college credit option. (BU-191A)

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). (BU284A) ☆

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## FOREIGN LANGUAGE

FLG131-A Elementary German I 3  
This introductory course includes reading, understanding, speaking, and writing in the German language. Elements of German culture, geography, and history will be included. (HU-125A) ☞

FLG132-A Elementary German II 3  
This course is a continuation of German I with emphasis on further development of speaking, reading, and writing skills. **Prerequisite: FLG131-A.** (HU-126A) ☞

FLS131-A Elementary Spanish I 3  
This course emphasizes the oral approach. All four phases of the language are taught: speaking, listening, reading, and writing. Grammar is introduced. Cultural and geographic aspects of Spain and Latin-America are experienced through text material. (HU-121A) ☆

FLS132-A Elementary Spanish II 3  
This course is a continuation of Elementary Spanish I with a brief review of the main verbs, an in-depth study of Spanish grammar with practice in translation and conversation, plus a study of Latin-American culture. **Prerequisite: FLS131-A.** (HU-122A)

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.** (HU-223A)

FLS232-A Intermediate Spanish II 3  
This course is a continuation of Spanish I (see course description). **Prerequisite: FLS231-A.** (HU-224A)

## GEOGRAPHY

### GEO124-A Regional Geography of the Non-Western World 3

This course is a regional study of the physical and cultural spatial patterns of Middle America, South America, North Africa/Southwest Asia, Sub-Saharan Africa, South Asia, East Asia, Southeast Asia, and the Pacific World. (HU-140A)

### GEO151-A Social Geography 3

This course deals with the nature and distribution of the major types of land forms, climate, kinds of soil, and other natural resources plus a discussion of natural environment and its relation to human activities. (SS-120A)

## HEAVY EQUIPMENT

### HEQ131-C Safety and Intro to Heavy Equipment 3

This course is an introduction to the equipment, jobs, working conditions, maintenance, and safety of equipment operation. (HE-131C)

### HEQ151-C Hydraulics and Hydrostatics 3

Theory and application of hydraulic principles including diagnosing and servicing of heavy equipment hydraulic systems is covered in this course. (HE-151C)

### HEQ152-C Equipment Operation and 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. **Prerequisite:** HEQ131-C, HEQ155-C & HEQ160-C. (HE-152C)

### 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. **Prerequisite:** Math Elective. (HE-155C)

### HEQ156-C Equipment Operation and Maintenance II 7

This course is a continuation of Equipment Operation I with more difficult and complicated live projects using all types of equipment. Most projects are off campus. **Prerequisite:** HEQ152-C. (HE-156C)

### 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. (HE-157C)

### HEQ158-C Equipment Operation and 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. **Prerequisite:** HEQ156-C. (HE-158C)

### HEQ160-C Equipment Lubrication and 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 in this course. (HE-160C)

### HEQ161-C Equipment Reconditioning Theory I 5

This course covers the technical information used for troubleshooting, testing, and reconditioning heavy equipment. **Corequisite:** HEQ163-C. (HE-161C)

### HEQ163-C Equipment Reconditioning Lab I 5

In this course you will develop skills in inspecting, troubleshooting and reconditioning heavy equipment. Safety procedures in repair are stressed. **Prerequisite:** HEQ178-C; **Corequisite:** HEQ161-C. (HE-163C)

### 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. (HE-172C)

### HEQ178-C Heavy Equipment Welding 3

In this course repair SMAW (ARC) welding is taught with emphasis on E-7018 electrodes in all positions and welding heavy cross sections. General shop methods of metal identification are studied. Build up and hard facing procedures are taught. (WE-178C)

### 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. (HE-252C)

### 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. (HE-257C)

### 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; **Corequisite:** HEQ264-C. (HE-263C)

### 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. (HE-264C)

### 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. (HE-267C)

## 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. (HU-231A) ☆

### HIS111-A Western Civilization: Early Modern 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. (HU-232A) ☆

### 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. (SS-131A) ☆

### 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. (SS-132A) ☆

### HIS201-A Iowa History 3

This course reviews Iowa history from settlement to the present. It is designed to provide the student with a background in the people, forces, and events which have molded this state. (SS-230A) ☆

### HIS251-A U.S. History 1945 to 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. (SS-235A) ♻️

### HIS253-A American Indian History and 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. (SS-258A) ♻️

### HIS278-A Women of Distinction in U.S. History 3

This course will take a look at the women who have played a significant roll in U.S. History. Students will develop an understanding not only of the individual contributions of these women, but also the historical context in which their contributions occurred. In addition to approaching this topic from the perspective of significant individuals, it will include theme approaches such as women in politics, women in education, etc. Students will be actively involved in researching information on women of distinction. (SS-249A) ♻️

### HIS949-A 20th Century World History 3

20th Century World History is a survey of the social, political, economic, and geographical developments in the world since 1900, concentrating on Africa, Asia, Europe, Latin America, and North America. This course examines various important events in the 20th century and how they have shaped the world we are living in today. We will investigate how various groups and individuals assert their identities in a world that is becoming more interconnected as time passes and more homogeneous. (SS-244A) ♻️

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## 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:** HIT138-E. (MT-151E)

### 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 the 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. (MT-149E)



- HIT250-E Coding I 3  
This course is an introduction to diagnostic and procedural coding and classification systems with emphasis on ICD-9-CM coding. You will learn how to classify and index diagnoses and procedures for the purposes of standardization, retrieval, and statistical analysis. ICD-9-CM coding conventions and inpatient coding guidelines are emphasized. **Prerequisites:** HIT138-E, BIO165-A, HIT370-C  
**\*For non-HIT majors, the prerequisite of HIT370-C may be eliminated with instructor approval; Corequisites:** BIO170-A, BIO198-E. (MT-111E)
- 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-9-CM. Prospective payment systems (i.e., DRGs), reimbursement and billing issues, and encoders and groupers related to ICD-9-CM coding are presented. You will be working with actual medical records in the laboratory. Further emphasis is placed on accuracy and compliance with ICD-9-CM coding requirements. **Prerequisite:** HIT250-E. (MT-114E)
- 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. Prospective payment systems (i.e., APGs), reimbursement and billing issues, and encoders and groupers related to CPT and ICD-9-CM coding will be presented. You will be working with actual medical records in the laboratory. Further emphasis is placed on accuracy, compliance and outpatient coding requirements. **Prerequisite:** HIT251-E. (MT-117E)
- HIT253-E Oncology Coding and Staging Systems 4  
This course will focus on the basic concepts of coding and staging of malignant neoplasms. It will provide a general overview of the International Classification of Disease for Oncology, 3rd Ed. topography codes and International Classification of Disease, 9th Ed. morphology nomenclature and classification systems. American Joint Committee on Cancer (AJCC) staging, SEER Summary staging, and extent of disease concepts used by physicians and cancer surveillance organizations to determine treatment and survival will be emphasized. **Prerequisites:** Completion of all Medical Science courses, or Instructor's approval. 39.4 Lec. Hrs./79.8 Lab Hrs. (MT-150E)
- HIT290-C Reimbursement Methods 3  
During this course, you will examine reimbursement methodologies, including prospective payment, utilized in a variety of health care settings. You will explore date quality for optimal reimbursement, date auditing, and compliance processes. You will also be introduced to billing procedures and requirements for claims submissions. **Prerequisites:** HIT250-C and HIT251-C. **Corequisites:** HIT252-C.
- HIT351-C Electronic Applications for Health Care 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 ACCESS and PowerPoint software and additional software applications as available. **Prerequisite:** CSC110-A. (MT-231C)
- 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. (MT-101C)
- HIT380-C Health Records in Alternative Care Settings 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. (MT-121C)
- HIT420-C Legal Aspects of Health Information 2  
This course will cover in-depth 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. (MT-210C)
- HIT430-E Quality Improvement 2  
This course has specific applications to the Health Information Technology 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. (BU-249E)
- HIT451-C Allied Health Statistics 3  
Terms, definitions, and formulae 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. (MT-221C)
- HIT594-C HIT Practicum A 1  
This is a supervised 50-hour professional practice experience designed to introduce the student to the daily operations and functions of a Health Information Management Department. You will use newly acquired knowledge and skills as well as observe skills and interactions with other healthcare professionals. You will be required to meet written goals and objectives, undergo a work evaluation, and submit a written report on your learning experience. Although the acute care setting is a common setting for Professional Practice I, any healthcare setting may be appropriate. Site to be arranged by the instructor. **Prerequisite:** HIT370-C. (MT-181C)
- HIT595-C HIT Practicum B 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. Site to be arranged by the instructor. **Prerequisites:** HIT370-C, HIT250-E, HIT602-C, HIT380-C. (MT-182C)

HIT597-C HIT Practicum II 4  
This is a supervised 200-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. Site to be arranged by the instructor. **Prerequisites: Successfully completed all HIT courses with a “C” or better grade. (MT-183C)**

HIT602-C Medical Transcription 3  
Instruction will include basic transcription techniques, concepts, word processing hardware and software, and a variety of transcription equipment. You will also learn additional medical terminology and common abbreviations specific to a variety of healthcare specialties. **Prerequisite: HIT370-C, HIT138-E; Keyboarding skills: be able to pass a typing test at 40 WPM with accuracy. (MT-113C)**

HIT946-C Seminar 1  
This is a capstone course designed to help you develop research and presentation skills and bring you up to date with current healthcare trends. This should be taken the last semester of the program. (MT-250C)

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## HEALTH SCIENCES

HSC050-H Intro to Medical Terminology 2  
This course presents a study of basic medical terminology, prefixes, suffixes, word roots, combining forms, special endings, plural forms, abbreviations, and symbols are included in the content. A programmed learning, word building system will be used to learn word parts that are used to construct or analyze new terms. This provides the opportunity to decipher unfamiliar terms and check their spelling. Emphasis is placed on spelling, definition, usage and pronunciation. Abbreviations will be introduced as related terms are presented. (HL-043H)

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. (HL-141E)

HSC114-E Medical Terminology 3  
This course is an individualized course which includes spelling and definitions of medical terms including work 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. (HL-145E)

HSC145-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. (SC-247A)

HSC163-A Nutrition 3  
This course provides the student with a basic background of the nutrients essential to maintain the physical and mental well being of the human body. Included is a review of the digestive process and food selection related to health promotion throughout the life cycle. (SC-165A) ♻️

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. (NU-190E)

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## JOURNALISM

JOU118-E Community Journalism 3  
The role and responsibility of journalism in “Small Town” Americana is covered in this course. Circumstances unique to this segment of journalism are emphasized. (JO-201E)

JOU120-A Beginning Newswriting 3  
In this course you will learn the techniques for gathering information and writing accurate, logical, and compelling news articles. (JO-101A)

JOU123-A Intermediate Newswriting 3  
This is a continuation of Newswriting I. Students will continue to build skills and techniques in writing for newspapers and magazines. You will use those skills to write articles for the College newspaper. **Prerequisite: JOU120-A. (JO-105A)**

JOU130-E Editing, Heading and Layout Design 3  
This course covers the fundamentals of both manual and computer-based newspaper editing and design. Special attention is given to the techniques used in designing story and page layouts as well as using photographs, graphics, and sidebars to enhance design. (JO-211E)

JOU161-E Feature Writing 3  
This course places an emphasis on identifying, researching, planning, developing, and writing feature news articles. **Prerequisite: JOU120-A. (JO-205E)**

JOU175-E Photo Journalism 3  
You will learn the basic concepts and practices of news photography. In addition, the course will include right to privacy discussions, exposure to digital photography, exercises in compiling photo essays, and the compilation of a portfolio featuring the student’s work. Requires 35-millimeter camera, preferably with manual controls. (JO-125E)

JOU211-E Ethics in the Media 3  
In this course you will learn the concepts of libel, copyright, confidentiality of sources, right of privacy, and other issues as they apply to the journalism profession. The course will also include a discussion of news gatekeeping and the issues of individual versus public interest. (JO-121E)

## LEGAL ASSISTANT

LGL110-A Intro 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. (BU-131A) <sup>Ⓢ</sup>

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## 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. (HU-101A) ☆

LIT110-A American Literature to  
Mid-1800s 3  
This course provides insights into the styles, philosophies, and themes of American authors from the beginnings of American literature to 1865. Writers of this period include Emerson, Thoreau, Whitman, and Whittier. (HU-201A) ☆

LIT111-A American Literature since  
Mid 1800s 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. (HU-202A) ☆

LIT114-A American Novel 3  
This course is a survey of the American Novel with emphasis on 20th century works. (HU-216A) <sup>Ⓢ</sup>

LIT134-A Multicultural Literature 3  
Multicultural Literature explores through a variety of literary types. The cultural and ethnic voices that are in an undeniable part of modern American life. Students read, discuss and critique materials representing a wide range of ethnic, racial and other culturally diverse groups. Emphasis centers on the assessment and appreciation of the strength and values that cultural diversity brings to contemporary American society. (HU-285A) <sup>Ⓢ</sup>

LIT141-A British Lit 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. (HU-281A) <sup>Ⓢ</sup>

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. (HU-241A) ☆

LIT151-A World Literature II 3  
This course is a continuation of World Literature to 1660. The main literary movements from the enlightenment period of the 17th century to the masterpieces of the 20th century will be covered. (HU-242A) ☆

LIT161-A Short Story 3  
This course allows students to gain pleasure from reading short stories, enhance students' pleasure through analysis of fiction elements such as title, plot, characters, setting, and style which bring greater awareness of the authors' skills and individuality as well as the universality of the literature. (HU-205A) <sup>Ⓢ</sup>

LIT192-A Rural Literature 3  
This course focuses on several themes that are universally present in the rural experience and exposes you to a wide range of literature written about the unique aspects of rural life in the Midwest. (HU-257A)

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## MATHEMATICS

MAT032-H Arithmetic for College  
Students A 2  
This course consists of instruction in basic math including addition, subtraction, multiplication, and division of whole numbers, fractions, and decimals. It also includes percents, ratios, and proportion. (MA-021H)

MAT033-H Arithmetic for College  
Students B 2  
This course consists of instruction in measurement under both the customary and metric systems. Topics also include signed numbers, solving equations, real numbers, and graphing. (MA-022H)

MAT060-H Algebra IA 3  
This course will give you a basic algebraic background. Topics covered include terms, expressions, properties, equations, plane geometry, integers, word problems, graphs, simultaneous equations, and factoring. (MA-020H)

MAT061-H Algebra IB 3  
This course is a continuation of Algebra IA. The topics covered include algebraic fractions, exponents, radicals, quadratic equations, ratio, proportions, variation, angles, Pythagorean theorem, similar triangles, and basic trigonometry. (MA-027H)

MAT070-H Algebra IIA 3  
This course will begin with a review of the basics taught in Algebra I. Additional topics covered include real numbers, axioms, theorems, special products, and factoring. (MA-028H)

MAT071-H Algebra IIB 3  
This course is a continuation of Algebra IIA. The topics covered include complex numbers, equations with radicals, functions, variations, rational exponents, logarithms, and the binomial theorem. (MA-029H)

MAT101-A Intermediate Algebra 3  
This course is applicable only to students who already have basic knowledge of algebra. Reinforcement of topics from elementary algebra stressing problem solving, drills, conclusion obtained from graphs and other data, and a substantial expansion of radical equations are covered. New topics are variations, exponential functions and logarithms, and quadratic equations. This course is counted for graduation credit toward AAS degree but not the AA nor the AS degree. This is also a preparatory course for college algebra. (MA-111A)

- 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. You are required to have a graphing calculator for this course. The TI-83 is strongly recommended. **One year of high school algebra or MAT106-E is required.** (MA-102A) ☹
- MAT104-C Applied Math Topics** 3  
This course is designed to give you with 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. (MA-125C)
- 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. **Prerequisite: One year high school algebra or equivalent.** (MA-125E)
- 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, basic statistics, and basic geometry. Estimation and number sense are stressed throughout the course. Calculator usage is also covered. (MA-120C)
- MAT110-A Math for Liberal Arts** 3  
This course is designed to introduce you to a variety of interesting contemporary 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 contemporary mathematics. One year of high school algebra is recommended but not required. (MA-100A) ☆
- MAT111-A Math for Liberal Arts** 4  
A mathematics course designed for the liberal arts student. The course covers a broad spectrum of topics designed to help the student survey and develop skills that lead to appreciation for the uses and values of mathematics. Topics include: Critical thinking skills, sets, logic, numeration systems, number theory, mathematical systems, geometry, counting methods, probability, and statistics. Enrichment topics may include social choice and decision making, and the mathematics of finance. (MA-105A)
- MAT121-A College Algebra** 4  
This course is designed to strengthen and expand the algebra skills required for further mathematical study in trigonometry and calculus. 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. You are required to have a graphing calculator for this course. A TI-83 is strongly recommended. **Two years of high school algebra or MAT102-A are required.** (MA-103A) ☆
- 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. **Prerequisite: One year high school algebra or equivalent.** (MA-130E)
- 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, addition types of equations, and systems of equations. **Prerequisite: MAT123-E.** (MA-132E)
- 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. (MA-119A) ☹
- MAT130-A Trigonometry** 3  
This course is designed to develop your knowledge of trigonometry and related skills prior to the study of calculus. The six trigonometric functions and applications of those functions are emphasized. Other topics covered may include graphing of the trigonometric functions, trigonometric identities and equations, analytic geometry, and exponential and logarithmic functions. A graphing calculator is required for this course. **Two years of high school algebra, MAT102-A, or MAT121-A are required.** (MA-205A)
- MAT132-E Algebra, Geometry and Trigonometry I** 4  
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, functions and graphs, systems of linear equations, quadratic equations, and vectors. **Prerequisites: high school Algebra I and II.** (MA-231E)
- MAT133-E Algebra, Geometry and Trigonometry II** 3  
This course is a continuation of Algebra, Geometry, and Trigonometry I. The topics of the course are exponents and radicals, complex numbers, exponential and logarithmic functions, additional types of equations and systems of equations, equations of higher degree, inequalities, variation, trig identities, and plane analytic geometry. **Prerequisite: MAT132-E.** (MA-232E)
- 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. Other topics may be covered as time permits. 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. **One year of high school algebra, MAT110-A or MAT106-E is required.** (MA-106A) ☆

**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. (MA-152A) ☆

**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 collecting data, descriptive statistics, probability, binomial and normal distributions, estimating, hypothesis testing, and regression analysis. **One year of high school algebra or MAT106-E is required.** (MA-104A) ☆

**MAT166-A Calculus for Business and Social Science** 5  
 A study of functions, limits, continuity, differentiation, and integration. Emphasis is on theory and applications through out. This course is designed to satisfy the Calculus requirement for most non-math and non-engineering major students. (MA-227A) √

**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. You are required to have a graphing calculator for this course. **Prerequisite: MAT121-A and MAT130-A or four years of advanced high school math.** (MA-221A) ☆

**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: College Algebra or Trigonometry or appropriate CPT score on math assessment.** (MA-125A) √

**MAT216-A Calculus II** 4  
 The study of calculus is expanded in this course to include more advanced topics. Logarithmic, exponential, and trigonometric functions will be expanded in detail. Other topics include infinite series, analytic geometry, and polar coordinates. The emphasis of the course will be on problem solving techniques and theory. You are required to have a graphing calculator for this course. **Prerequisite: MAT210-A or an equivalent Calculus I course.** (MA-222A) ☆

## MANUFACTURING

**MFG119-C Machine Trade Print Reading** 2  
 This course will provide you with the ability to read blueprints and to interpret the information. You will gain experience in the reading of orthographic drawings and recognize different symbols used in the machining process. Topics of study include auxiliary projection of parts, threads and fasteners. You will be able to develop shop prints for a machining process. (DR-143C)

**MFG170-C Manufacturing Welding** 1  
 The emphasis of this course is on precision welding as related to jigs and fixtures and application of preheat and postheat methods to minimize distortion. (WE-185C)

**MFG180-C Basic Machine Operations** 2  
 This course expands the instruction in basic mill, lathe and machine operations. The student will also be given the opportunity to run pre-programmed parts on a CNC mill or lathe. Advance instruction will also be provided in the use of measurement devices and jigs. Instruction will also be given in tooling cutter geometry and cutting physics. **Prerequisite: MFG181-C.** (GM-116C)

**MFG181-C Intro to Machining** 3  
 This course provides instruction in basic mill, lathe and machine operations. The student will also receive instruction in the care and maintenance for the different types of machines. Instruction will include an introduction to the safe and proper use of tools, machines and measurement devices used in basic machining. Instruction will also be given in basic drilling, cutting and grinding functions. (GM-117C)

**MFG228-C Machine Operations II** 4  
 This course builds upon Machine Operations I providing instruction in intermediate machine operations. You will learn to set up different machines and will advance from performing one function to multiple functions on multiple machines. **Prerequisite: MFG180-C.** (GM-158C)

**MFG232-C Machine Operations III** 3  
 This course builds upon Machine Operations II providing instruction in advanced machining operations. You will perform multiple operations on various machines. **Prerequisite: MFG228-C.**

**MFG325-C CAM 1** 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: CAD107-E.** (ME-205C)

**MFG360-C CNC Programming/Operation I** 8  
 The course will emphasize programming of Computer Numeric Controlled equipment with G & M codes. You will create basic tool paths on the CNC equipment necessary to machine various projects from a given print. In addition, you will hands-on experience in the basic setup and operation of production-type equipment. You will use both turning centers and machining centers to complete basic projects that you have programmed. The use of proper speed and feed calculations and the calculating of angles and arcs using trigonometry functions will be utilized. **Prerequisite: MFG181-C.**

**MFG361-C CNC Programming/Operations II** 8  
 This course is a continuation of CNC Programming/Operation I. You will program advanced projects for multiaxis CNC equipment. You will also set up and use basic fixtures to operate multiaxis machines for the completion of these projects. Each project may utilize many advanced programming techniques from onboard programming software to computer and simple Computer-Aided Manufacturing (CAM). **Prerequisite: MFG360-C.**

**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 I, Hydraulics; Segment 2, Pneumatics; and Segment 3, Troubleshooting. **Prerequisite: Math Elective.** (ME-228E)

## 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. (BU-248A) ☆

**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. (BU-240A) ☆

**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. (HR-121A) ☆

**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 significance of different management styles and their impact on subordinates' performance. (BU-241A) ☆

**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. (HR-101A) ☆

**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 course 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. (HR-215A) ☆

**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 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. (HR-201A) ☆

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## MARKETING

**MKT109-E Basics of Marketing** 3  
This course includes competencies parallel to those in MKT110-A. This course is designed to accommodate approved articulation agreements with area schools. (BU-242E)

**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. (BU-242A) ☆

**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. (BU-243A) ☆

**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. (BU-135E) ☆

**MKT151-E Advertising** 3  
Advertising is defined as non personal communication using mass media to persuade or influence. This course will cover the principles, methods, and media used by business managers who are responsible for the advertising in their companies. (BU-123E)

**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. (BU-250A) ☆

**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. (BU-246A)

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## MASS MEDIA STUDIES

**MMS101-A Mass Media** 3  
This course provides an introduction to mass media including elements, functions, and audiences of mass communication. Attention is given to communication theory as it pertains to the various media. Specific media covered will include newspapers, magazines, books, radio, recordings, television, film, and the new electronics. (HU-253A) ☆

**MMS241-A Public Relations and Marketing** 3  
This is a course that studies the practice of public relations and those elements affecting or are affected by public relations: history, publics, public opinion, theories, ethics, types of media, writing skills, presentation skills, crises situations, cultural differences/beliefs, law, careers in public relations and the future of public relations.

## 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. (HU211A) ☆
- 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. (HU-212A)
- 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 evidence in the works of selected pivotal composers. **Recommended Prerequisite: Music Appreciation or Music Theory I.** (HU-278A) ♪
- 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. (HU-280A) ♪

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## COMPUTER NETWORKING

- NET102-E Computer Architecture 3  
This course is an overview of how computational devices work. It teaches the principles and operation of digital hardware and computers, describing computers as a series of layers from higher-level languages to logic gates, that are each an abstraction of the layer below and introduces the computer as an integrated system of interconnected devices. Additionally, methods for upgrading, maintaining and repair of computational hardware and its associated software will be covered. (CS-152E)
- NET199-E Computer Systems Self Directed 1  
Each self directed project must be arranged in advance through a supervising faculty member, the division Dean, and the Chief Academic Officer.
- NET213-E CISCO Networking 4  
This is the first of four CCNA courses leading to the Cisco Certified Network Associate (CCNA) certification. This course introduces you, the Cisco Network Academy Program student, to the networking field. The course focuses on network terminology and protocols, local-area networks (LANs), wide-area (WANs), Open System Interconnection (OSI) models, cabling, cabling tools, routers, router programming, Ethernet, Internet Protocol (IP), addressing and network standards. (CS127E)
- NET223-E CISCO Routers 4  
This is the second of four CCNA courses leading to the Cisco Certified Network Associate (CCNA) certification. This course focuses on initial router configuration, Cisco IOS Software management, routing protocol configuration, TCP/IP, and access control lists (ACLs). You will develop skills on how to configure a router, manage Cisco IOS Software, configure routing protocols, and create access lists controlling access to the router. **Prerequisite: NET213-E.** (CS-154E)
- NET233-E CISCO Switches 4  
This is the third of four CCNA courses leading to the Cisco Certified Network Associate (CCNA) certification. This course focuses on advanced IP addressing techniques, (Variable Length Subnet Masking—VLSM), intermediate routing protocols, RIP v2, single-area OSPF, (EIGRP), command-line interface configuration of switches, Ethernet switching, Virtual LANS (VLANs), Spanning Tree Protocol (STP), and VLAN Trunking Protocol (VTP). **Prerequisite: NET223-E.** (CS243E)
- NET243-E CISCO Wide Area Networks (WAN) 4  
This is the last of four CCNA courses leading to the CISCO Certified Network Associate (CCNA) certification. This course focuses on advanced IP addressing techniques (Network Address Translation [NAT], Port Address Translation [PAT], and DHCP), WAN technology and terminology, PPP, ISDN, DDR, Frame Relay, network management, and introduction to optical networking. In addition, you will prepare for taking the CCNA Exam. **Prerequisite: NET233-E.** (CS-245E)
- NET317-E Windows Servers and Workstations 4  
You will plan and implement a network environment utilizing Windows 2000/3/etc NT. You will assume the role of network administrator and apply the concepts of networking with Windows 2000/3/etc family NT server. Topics include network design and protocols, server hardware, server installation, server configuration, configuring server storage, backup and performance options, server clients, Active Directory, managing the server through accounts and groups; managing server folders, permissions, and software installation; printer management, Internet and Intranet services; Server and Network monitoring; and performance tuning. **Prerequisites: NET102-E and NET223-E.** (CS-229E)
- NET404-E Linux Network Administration 4  
You will plan and implement a Unix style network utilizing Linux. In doing so you will assume the role of network administrator and apply the concepts of networking with Linux, planning the system, installing the network operating system, understand the history and structure of Linux and the role of the system administrator, utilize shells, scripts, and editors, apply administrative tasks including adding users and groups, understand hardware redundancy and fault tolerance, track system usage, utilize system logging, create scripts and automated procedures, manage printing, and back up system data. **Prerequisite: NET445-E.** (CS-244E)
- NET445-E Linux Operating System 4  
This is an introductory, hands-on course that provides you with the skills to use the Linux operating system. Basic GUI operations and Linux commands for editing and manipulating files, managing programs, managing processes and interacting with the BASH shell are presented via lecture and lab exercises. It is intended for people with some computer experience but little or no experience with a Linux/UNIX system. (CS-155E)

NET614-E Network Security 4  
 You will explore and understand the concepts of network security. Topics include TCP/IP protocols and their associated security issues, Internetworking technology issues, network configuration evaluation and security, why protection is necessary, cryptography and its enhancement to the network, firewalls and proxy servers, main firewall products and features, Internetworking security assessment, security policy development and implementation, server security implementation and management, and remote connections implementation and management. **Prerequisites:** NET317-E and NET404-E. (CS-240E)

NET751-E Telecommunications 4  
 Focusing on all aspects of telecommunications, this course provides a comprehensive overview of how information, including voice and data, travels throughout the world. Topics include fundamental switching and signaling principles, the history of telecommunications, PAX and PBX principles and configuration, multiplexing principles, baseband and broadband technologies, mobile, wireless, VOIP and emerging technologies. **Prerequisite:** NET223-E. (CS-246E)

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## PHYSICAL EDUCATION

PEA134-A Golf I 1  
 This course provides both classroom instruction and application. Emphasis is on rules, history, strategy, and golf course application of techniques. (PE-101A)

PEA174-A Tennis I 1  
 The focus of this course is on developing a basic knowledge of game play with ample opportunity for tennis court application. Includes instruction on strokes, spins, and other strategies used in both singles and doubles play. Particular emphasis will be given to tennis rules and etiquette. (PE-102A)

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 school coach. (PE-110A) ~Ⓜ

PEH115-A Wellness Education 3  
 Wellness Education uses a classroom approach to teach 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. (PE-111A) ☆

PEH185-A Contemporary Health Issues 3  
 This course is an exploration of areas of human health. Topics include emotional health, chemical alteration of behavior, human sexuality, personal health care, disease and health in society. (SC-103A) ~Ⓜ

PEH205-A Childhood Health, Safety and Nutrition 3  
 This course is designed to familiarize the student to health checks, health routines, safe environment practices, and proper nutrition for young children. (ED-150A) ~Ⓜ

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## 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. (HU-252A) ☆

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. (HU-250A) ☆

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. (HU-251A) ~Ⓜ

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. (HU-264A) ~Ⓜ

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## 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. (SC-101A)

PHS111-A Introduction to Physical Science Lab 1  
**Corequisite:** PHS110-A. (SC-102A)

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. (SC-104A) ~Ⓜ

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:** PHS143-A. (SC-243A) ☆

PHS143-A Principles of Astronomy Lab 1  
**Corequisite:** PHS142-A. (SC-244A)



PHS185-A Intro to Earth Science 3  
Physical Geography 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 and life. Various Earth processes are discussed: heating and pressure of air, winds, storms, climates and causes, the role of the oceans, land-form processes of plate tectonics, mountain building, volcanism, gradation and fluvial processes, and glaciation. (SS-122A) ~

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## PHYSICS

PHY110-A Survey of Physics I 3  
Survey of Physics I is a 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. (SC-170A) ☆

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. **Prerequisites:** PHY110A. (SC-172A) ☆

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## PRACTICAL NURSING

PNN203-C Introduction to Pharmacology 1  
This course provides basic essential information about mathematics and pharmacology for the practical nurse. Practices, procedures, medications, and drug preparations are examined. Focus is placed on drug calculations and safe administration for various drug routes. Geriatric and pediatric drug considerations are highlighted. Patient education and the safe administration of medication are emphasized. **Prerequisites:** Acceptance to Nursing Program. **Corequisites:** PNN651-C or PNN655-C. (SC-106A)

PNN655-C Practical Nursing I Extended 6  
This course provides an introduction to the health environment and the role of the practical nurse. Concepts of health, illness, human needs, and environment are examined in relationship to communication, nursing process, and nursing roles. Emphasis is placed on the assessment and the performance of basic nursing skills in a nursing laboratory setting. **Prerequisites:** Acceptance to Extended Nursing Program, HSC172-E Nurse Aid course. **Corequisites:** PNN203-C. (NU-126C)

PNN651-C Practical Nursing I 8  
This course provides an introduction to the health environment and the role of the practical nurse. Concepts of health, illness, human needs, and environment are examined in relationship to communication, nursing process, and nursing roles. Emphasis is placed on the assessment and the performance of basic nursing skills in caring for patients with predictable needs in a nursing laboratory setting. **Prerequisite:** Acceptance to Practical Nursing Program, HSC172-E Nurse Aid course. **Corequisite:** PNN203-C. (NU-120C)

PNN656-C Practical Nursing II Extended 6  
The practical nursing student learns to care for patients with predictable needs and starts to develop the concepts and skills of the nursing process. Emphasis is placed on the assessment and the performance of basic nursing skills in a nursing laboratory setting. **Prerequisites:** PNN655-C, PNN203-C, BIO165-A, BIO167-A, BIO151-A. (NU-130C)

PNN652-C Practical Nursing II 12  
The emphasis in this course is in the development of higher level concepts and skills within the nursing process. The roles of teacher, communicator, and caregiver are explored within the health-illness continuum. Pharmacological and diet therapy principles are integrated through the lifespan. Clinical experiences are provided with emphasis on provision of care for patients with predictable needs. **Prerequisites:** Math Elective, PNN651-C, PNN203-C, BIO165-A, BIO167-A, BIO151-A, PSY121-A. (NU-124C)

PNN657-C Practical Nursing III Extended 7  
Emphasis is in the development of higher level concepts and skills within the nursing process. The roles of the teacher, communicator, and caregiver are explored within the health-illness continuum. Pharmacological and diet therapy principles are integrated through the lifespan. Clinical experiences are provided with emphasis on provision of care for patients with predictable needs. **Prerequisites:** PNN656-C, BIO 170-A, BIO172-A, PSY121-A, Math Elective. (NU-131C)

PNN653-C Practical Nursing III 5  
Nursing II expands the nursing roles of caregiver, communicator and teacher to include the role of manager and member of the profession. Application of cognitive and psycho-motor skills are emphasized. Clinical experiences are provided by a preceptorship with provision of care for patients with multiple predictable needs throughout the lifespan. **Prerequisites:** PNN652-C, BIO170-A, BIO172-A, SOC110-A. (NU-125C)

PNN658-C Practical Nursing IV Extended 6  
This course expands the nursing role of caregiver, communicator and teacher to include the role of manager and member of a profession. Application of cognitive and psycho-motor skills are emphasized. Clinical experiences are provided by a preceptorship with provision of care for patients with multiple predictable needs throughout the lifespan. **Prerequisite:** PNN657-C. (NU-132C)

## 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 intuitions, 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. (SS-255A) ☆

### 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. (SS-240A) ☆

### 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. (SS-241A) ~

### POL201-A The U.S. Constitution 3

The United States Constitution course focuses on the historical evolution of the United States Constitution with emphasis on its antecedents, interpretation, and change. Topics include a study of the Constitution's historical background and its basic features, a study of the seven articles and twenty-six amendments, and an examination of current topics. (SS-243A) ☆

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## PARALEGAL

### PRL115-A Legal Research and Writing 3

Legal Research & Writing explores methods and techniques regarding issue recognition, finding sources of the law, applying the law to specific situations, and creating documentary work products. Students utilize computer-aided legal research. Course work includes basic legal documents as well as completion of major research and writing projects. (BU-285A) ~

### PRL151-A Family Law 3

Family Law considers domestic relationships: marriage, annulment, divorce, child custody, child and spousal support, paternity and adoption and the growing concern for care of the elderly. (SS-247A) ~

### PRL168-A Probate/Property 3

Property/Probate encompasses real and personal property subject matter including the acquisition, transfer and destruction of such property. This course provides an overview of common property issues including common transfers such as sale and disposition at death. (BU-280A) ~

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## 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. (SS-110E)

### 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. (SS-110A) ☆

### 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. (SS-112A) ☆

### 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. (SS-115A) ~

### 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 this crucial transition from childhood to adulthood. ~

### PSY225-A Adult Developmental 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. (SS-117A) ~

PSY241-A Abnormal Psychology	3	PSY251-A Social 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. <b>Recommended Prerequisite:</b> PSY111-A. (SS-113A) ☆		This course is the study of interpersonal relations, social attitudes, group dynamics, inter-group relations, class and cultural influences in a psychological context. (SS-116A) ♪	
PSY246-A Introduction to Counseling Skills	4	PSY261-A Human Sexuality	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, <i>Becoming a Helper</i> , 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 to make the issues come alive and allow students to apply their ideas to practical situations. (SS-271A) ♪		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. (SS-216A) ☆	
		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. (SS-114A) ♪	

## POWERLINE

PWL168-C DC Theory	2	PWL176-C Field Training IV	4
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. <b>Corequisite:</b> Math Elective. (PL-168C)		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. <b>Prerequisite:</b> PWL174-C; <b>Corequisite:</b> PWL183-C. (PL-176C)	
PWL169-C AC Theory	2	PWL177-C Trade Fundamentals II	3
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. <b>Prerequisite:</b> PWL168-C; <b>Corequisite:</b> Math Elective. (PL-169C)		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. Also covered during this course will be the CDL requirements needed to obtain a Class A or Class B license. <b>Prerequisite:</b> PWL175-C; <b>Corequisites:</b> PWL169-C, PWL172-C. (PL-177C)	
PWL170-C Field Training I	4	PWL178-C Field Training V	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. <b>Corequisite:</b> PWL175-C. (PL-170C)		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. <b>Prerequisite:</b> PWL176-C; <b>Corequisite:</b> PWL182-C, PWL186-C. (PL-178C)	
PWL172-C Field Training II	4	PWL179-C Transformer Theory	5
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. <b>Prerequisite:</b> PWL170-C; <b>Corequisite:</b> PWL177-C. (PL-172C)		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. <b>Prerequisites:</b> PWL169-C, PWL177-C; <b>Corequisite:</b> PWL174-C. (PL-179C)	
PWL174-C Field Training III	4	PWL182-C Underground Distribution	3
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. <b>Prerequisite:</b> PWL172-C; <b>Corequisite:</b> PWL179-C. (PL-174C)		This course provides you with the opportunity to learn the theory and construction of high voltage, direct burial underground cables, enclosures, terminations, and specifications. <b>Corequisite:</b> PWL178-C. (PL-182C)	
PWL175-C Trade Fundamentals I	3		
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. <b>Corequisite:</b> PWL170-C. (PL-175C)			

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, PWL179-C; **Corequisite:** PWL176-C. (PL-183C)

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. (PL-186C)

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. (PL-272C)

## RADIOLOGIC TECHNOLOGY

RAD102-E Radiologic Patient Care 1  
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. **Corequisites:** RAD365-E, RAD142-E, RAD230-E, RAD115-E. (RT-102E)

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. **Corequisites:** RAD320-E, RAD122-E, RAD210-E. (RT-106E)

RAD115-E Fundamentals of Physics 3  
This course is an introductory physics course. Topics taught include concepts of radiologic science, radiologic quantities and units, fundamentals of physics, the atom, electromagnetic radiation, electricity and magnetism and electromagnetism. **Corequisite:** RAD365-E, RAD102-E, RAD142-E, RAD230-E. (SC-236E)

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. **Corequisites:** RAD320-E, RAD106-E, RAD210-E. (RT-122E)

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. **Prerequisites:** RAD122-E, **Corequisites:** RAD365-A, RAD102-E, RAD230-E, RAD115-E. (RT-142E)

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. (RT-162E)

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 occupancy's each modality. **Corequisite:** RAD260-E, RAD162-E. (RT-182E)

RAD210-E Clinical Education I 4  
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 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 I—General knowledge of a working x-ray department and patient care. **Corequisites:** RAD320-E, RAD122-E, RAD106-E. (RT-210E)

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. **Prerequisite:** RAD210-E, **Corequisite:** RAD365-E, RAD102-E, RAD142-E, RAD115. (RT-230E)

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 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 III—Be able to work as an individual within a department and with consistency in film quality and evaluation. **Prerequisite:** RAD230-E, **Corequisites:** RAD162-E, RAD182-E. (RT-260E)

**RAD320-E Imaging I** 2  
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 principals behind x-ray generation. **Corequisites:** **RAD122-E, RAD106-E, RAD210-E.** (RT-320E)

**RAD361-E Computed and Digital Radiography** 3  
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 orientated equipment they will be expected to operate while in the field. **Corequisites:** **RAD750-E, RAD550-E, RAD690-E.** (RT-361E)

**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 principals behind x-ray generation. **Prerequisite:** **RAD320-E;** **Corequisites:** **RAD102-E, RAD142-E, RAD230-E, RAD115-E.** (RT-365E)

**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:** **RAD760-E, RAD850-E, RAD795-E, RAD890-E.** (RT-510E)

**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 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 V—Designed to refine and transform student into the work force. **Prerequisites:** **RAD510-E, RAD750-E, RAD361-E, RAD690-E.** (RT-550)

**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 student into the work force. **Prerequisite:** **RAD550-E;** **Corequisite:** **RAD946-E.** (RT-480E)

**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, RAD361-E.** (RT-690E)

**RAD750-E Radiographic Pathology** 3  
This course provides the advanced radiographer 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 radiograph. **Corequisites:** **RAD550-E, RAD361-E, RAD690-E.** (RT-750E)

**RAD760-E Film Evaluation** 2  
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:** **RAD850-E, RAD510-E, RAD795-E, RAD890-E.** (RT-760E)

**RAD795-E Physics for Radiographers** 2  
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:** **RAD760-E, RAD850-E, RAD510-E, RAD890-E.** (RT-795E)

**RAD850-E Radiation Protection/Biology** 3  
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:** **RAD760-E, RAD510-E, RAD795-E, RAD890-E.** (RT-850E)

**RAD890-E Quality Assurance** 1  
This course is designed to make sure each radiography student is able to recognize the correct techniques settings as well as making sure all equipment is functioning correctly. Each piece of equipments' standard numbers will be discussed as well how to know if a piece of radiographic equipment is functioning correctly and within exact specifications. **Corequisites:** **RAD760-E, RAD850-E, RAD510-E, RAD795-E.** (RT-890E)

**RAD946-E Radiographic Seminar** 2  
This course will introduce students to the general format of the boards as well as what is expected of them on each subject matter. The application criteria and process of becoming eligible for boards will be reviewed. Test taking strategies and locations of sites where the test is available to them will also be covered. **Corequisite:** **RAD480-E.** (RT-946E)

## 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. ☆

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## STUDENT DEVELOPMENT

SDV022-H Study Strategies 2  
This course is designed to increase your success in college by providing you with strategies and techniques to reach your educational goals. Topics include critical reading, note-taking, memorization, test-taking, time control, communication, and personal issues that face many college students. (SS-030H)

SDV067-A College Transition 1  
This course introduces students to the college's expectations, environment, and resources so that they may become successful in their college experience. (EN-100A)

SDV135-E Job Seeking Skills 1  
You will construct a resume, cover letter, and reference sheet in this course. This course includes interviewing and job search techniques. (EN-100C)

SDV153-C Pre Employment Strategies 2  
A course designed to develop skills and materials necessary to obtain employment. (BU-181C)

SDV288-A Phi Theta Kappa  
Leadership Dev. Studies 3

This course is designed to provide students the opportunity to explore the concept of leadership and group dynamics and to assist them in developing and improving their leadership skills. Students will develop a personal philosophy of leadership. The Phi Theta Kappa Leadership Development Studies, the foundation of this course, is unique in its integration of the humanities into the leadership development curriculum. Students will study such topics as articulating a vision, applying ethics to leadership, and managing conflict by studying great leaders who have been portrayed in the humanities by writers, historians, and film-makers as well as by studying the works of these great leaders themselves and participating in experimental learning experiences. (HU-266A)

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## 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. (SS-130A) ☆

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.** (SS-211A) ☆

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. (SS-215A) ☆

SOC125-A Understanding Parenting 3  
This course examines the parenting process with particular emphasis upon the development of children from birth through adolescence. Concepts covered will include the roots of personality, influencing children's behavior, competence and achievement, parenting adolescents, and special children. (SS-217A)

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 Global Perspectives 3

This course is the study of the global systems that interact across cultures, their struggle for economic parity and justice, and the process of moving from one culture to another. This course will include a study of the clash of values between cultures, the effects of population demographics, the use/ misuse of natural resources, development in industrialized and not-industrialized nations, conflict and terrorism, cooperation among nations, and environmental issues shaping the world of the future. ☺

SOC200-A Minority Group Relations 3  
This course is a survey of the contributions that various minorities have made to the development of the United States. (HU-248A) ☺

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 population 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 perspectives from sociology, psychology, social work, anthropology, biology, health sciences, and history. ☺

SOC270-A Social and Behavioral  
Research Methods 3

Social and Behavioral Research Methods introduces and surveys the major concepts and strategies involved in the undertaking of empirical research. Students learn the meaning of such terms as reliability, validity, variance, and hypothesis. The major research methods include the true experiment, field research, secondary analysis, and surveys. Students assess sampling techniques and table construction. ☺

## SPEECH

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, observation and listening, and on the giving of critical feedback. Types of speeches assigned will include informative, persuasive, and special occasion. (EN-111A) ☆

## WELDING

WEL115-C Welding for Blueprint Reading 5  
Drafting, blueprint reading, and welding symbols will provide you with the ability to read shop drawings and welding symbols used on prints. This course will provide the welding student experience reading orthographic drawings and recognizing different welding symbols found in the welding field. **Prerequisite:** Math Elective. (DR-189C)

WEL118-C General Welding Theory and Metallurgy 5  
This course covers theory and fundamentals of basic welding and cutting processes along with practical applications for the student to build skills. It also identifies the production of metals, their numbering systems, and properties. Heat treatment of metals and welding applications of ferrous and non-ferrous metals will also be covered. (WE-103C)

WEL135-C Special Cutting Applications Lab 1  
This course covers the procedures used with oxyacetylene cutting, plasma arc cutting, and many other cutting processes. Setup and operation of these processes will be covered. (WE-115C)

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. (WE-105C)

WEL163-C Advanced Arc Welding (SMAW) 2  
This course covers basic arc qualification procedures as outlined in AWS Standard D1.1. You will also learn welding of alloys, hard facing of mild steel, and gas welding processes. **Prerequisite:** WEL152-C. (WE-120C)

WEL181-C Gas Metal Arc Welding 2  
This course will introduce you to the application of wire feed welding in all positions. You will be introduced to the various types of wire transfer, shielding gases, and wire used in the Gas Metal Arc Welding process. (WE-116C)

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 GMAW robotic welder programming. Setup and adjustment of equipment for welding on various thickness of stainless, aluminum, and steel will be emphasized. You will learn how to program and make adjustments to the robotic welding equipment. **Prerequisite:** WEL181-C. (WE-142C)

WEL188-C Advanced GMAW Theory 2  
Gas AWS D1.1 and/or ASME Section IX in alloys, ferrous, and non-ferrous metals are covered in this course. **Prerequisites:** WEL209-C, WEL187-C; **Corequisite:** WEL189-C. (WE-145C)

WEL189-C GMAW Certification 7  
In this course AWS D1.1 and/or ASME Section IX welding alloys, ferrous and nonferrous metals are practiced. **Prerequisites:** WEL209-C, WEL187-C; **Corequisite:** WEL188-C. (WE-165C)

WEL190-C Gas Tungsten Arc Welding 2  
This course is designed to introduce you to the Gas Tungsten Arc Welding process. You will learn the basic procedures for welding on carbon steel, stainless steel, and aluminum. (WE-118C)

SPC122-A Interpersonal Communications 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. (EN-135A) ♡

WEL193-C Gas Tungsten Arc Welding II 2  
This course covers the development of Gas Tungsten Arc Welding (GTAW) skills and techniques used in the flat, horizontal, vertical, and overhead positions. Welding to various codes will be emphasized. **Prerequisite:** WEL190-C. (WE-129C)

WEL194-C GTAW Advanced Theory 2  
This course covers the fundamentals of Gas Tungsten Arc Welding in all positions. Welding to AWS, ASME, and API codes are emphasized. **Prerequisites:** WEL209-C, WEL193-C; **Corequisite:** WEL195-C. (WE-157C)

WEL195-C GTAW Certification 7  
This course covers the fundamentals and techniques of Gas Tungsten-Arc Welding in all positions. Gas Tungsten-Arc Welding to AWS, ASME, and API codes is emphasized. **Prerequisites:** WEL209-C, WEL193-C; **Corequisite:** WEL194-C. (WE-167C)

WEL207-C Welding Certification Codes Lab 2  
This course applies inspection and testing methods, welder qualification requirements, and various welding codes to the students' job practice. The application of AWS D1.1, ASME Section IX, and API 1104 Codes will be used. (WE-140C)

WEL209-C Advanced Welding Theory and Codes 5  
This course covers application and theory of specialized welding and cutting processes. This course includes pipe and tube welding, resistance welding, metal surfacing, and automatic and robotics welding. Inspections and testing methods, welder qualification requirements, and various welding codes will also be covered. Emphasis is placed on the code structure and application of AWS D1.1, ASME Section IX, and API 1104. **Prerequisite:** WEL118-C. (WE-147C)

WEL212-C Production Welding Certification Lab 7  
Methods and techniques used in production/repetitive welding processes in flat, horizontal and vertical positions with Gas Metal Arc Welding (GMAW) equipment are emphasized and practiced in this course. Certification in GMAW according to the American Welding Society (AWS) D1.1 code is encouraged. **Corequisite:** WEL181-C and WEL152-C. (WE-151C)

WEL313-C Pipe Welding Theory-Uphill 2  
This course covers the fundamentals of carbon steel pipe welding in all positions. AWS D1.1, ASME Section IX, and API 1104 weld certification codes related to pipe welding are covered. **Prerequisites:** WEL163-C, WEL209-C, WEL193-C; **Corequisite:** WEL314-C. (WE-131C)

WEL314-C Pipe Welding Lab-Uphill 7  
This course covers the fundamentals of carbon steel pipe welding in all positions. The welding processes used will be Shielded Metal Arc Welding (SMAW) using E-6010 and E-7018 electrodes and the Gas Tungsten Arc Welding (GTAW) process. Upon successful completion of this course the student will be able to weld carbon steel pipe in all positions to AWS D1.1, ASME Section IX, and/or API 1104 codes. **Prerequisites:** WEL163-C, WEL209-C, WEL193-C; **Corequisite:** WEL313-C. (WE-161C)