

## 001 Horticulture/Landscape Specialist

### 10-001-103 Arboriculture (2 cr.)

Familiarizes students with several techniques, tools, and pieces of equipment used in the management on trees and tree populations. This course also serves to create an awareness of arboricultural careers as applied to commercial, municipal and utility employers.

### 10-001-108 Plant Propagation (2 cr.)

Addresses production and propagation techniques for growing plants. Students will explore using a variety of equipment and methods.

### 10-001-109 Landscape Construction 2 (2 cr.)

Teaches students to work with advanced construction projects, materials and methods. Students learn to develop a mobilization plan and a management system for project implementation.

### 10-001-110 Tree Biology (2 cr.)

Provides an overview of the tree system with an emphasis on growth and development, compartmentalization of wounds, and how the tree adapts to the urban environment.

### 10-001-111 Introduction to Horticulture (3 cr.)

Provides an overview of the horticulture profession, including its role and importance throughout history. Current trends and career opportunities will be covered. Particular attention is given to horticulture crops, plant classification, their use, and the interrelationships between the environment, plant growth and plant development.

### 10-001-112 Horticulture Soils (3 cr.)

Explores the properties of soils and applies them to horticultural uses as a growing medium and as an engineering base for landscaping.

### 10-001-113 Ornamental Plant Health Care (3 cr.)

Focuses on training to successfully pass the Wisconsin Department of Agriculture, Trade and Consumer Protection's Pesticide Applicator Certification Exam (which is proctored in this class). Additionally, students will be familiarized with chemical handling, mixing, calibration and application via field exercises.

### 10-001-115 Tissue Culture Propagation (2 cr.)

Teaches students how to set up a tissue culture lab and propagate plants, in vast numbers, using laboratory conditions. Class will propagate several types of plant material.

### 10-001-117 Equipment Operation, Horticulture (2 cr.)

Teaches students how to operate a variety of landscape equipment. Hands-on training will require the students to acquire an understanding of the safe operation of equipment. Focus will be on pre-operation, operation, and post-operation procedures and skills.

### 10-001-118 Irrigation Systems & Maintenance (2 cr.)

Develops a basic understanding of irrigation design. The focus is on irrigation installation, troubleshooting, maintenance and repairs.

### 10-001-119 Greenhouse Transition to Summer (1 cr.)

Is designed to give the learner the experience of working in a greenhouse during the transitional period of spring to summer plant tasks and needs. This class will include plant care both in greenhouse and in shade house. Also covered will be after care of greenhouse, hoop houses, and shade house facilities.

### 10-001-120 Interiorscaping & Greenhouse Mgmt (3 cr.)

Studies the identification, characteristics and physical requirements of interior plants. Also studies the operation of a greenhouse to include growing, soils, pest control, and basic procedures for operating and maintaining a greenhouse.

### 10-001-121 Hydroponic Growing & Systems (2 cr.)

Explores various hydroponic systems, their specific plant material, and growing conditions. Students will work hands-on with several units and plant materials.

### 10-001-122 Interiorscaping (2 cr.)

Studies the identification, characteristics, and physical requirements of interior plants.

### 10-001-123 Landscape Management (3 cr.)

Uses a practical approach to training people in the basics of landscape supervision and management. The course emphasizes the application of theory and covers landscape management functions and the skills needed to perform those functions.

### 10-001-124 Fundamentals of Aerial Tree Work (2 cr.)

Introduces students to the basic safety requirements, equipment and techniques employed by arborists who work aloft. Topics include applied rope-and-saddle and aerial lift usage, electrical hazard recognition and common knots used in the industry.

# Course Descriptions

## **10-001-125 Greenhouse Management & Control Systems (2 cr.)**

Examines the day-to-day operation of a greenhouse to include operating systems, spatial management and planning crop timing.

## **10-001-130 Turf Management (2 cr.)**

Studies the overall basics of turf applications including soils, lawn installation, Wisconsin grasses, Integrated Pest Management and maintenance.

## **10-001-131 Organic Land Care (2 cr.)**

The study and installation of organic inputs for healthy landscapes. Students will brew compost tea, make compost and operate lawn care equipment. Topics explored will include alternative lawn and land care practices, practical business applications and environmental implications of current practices.

## **10-001-132 Landscape Estimating (2 cr.)**

Teaches students to estimate all costs related to landscape projects and how to manage project costing.

## **10-001-133 Chain Saw Safety & Operation (2 cr.)**

Will familiarize students with common chainsaw practices within the urban forestry industry. Personal protective equipment, safe operation, routine maintenance and common cutting techniques in accordance with current industry standards will be emphasized. Students will operate chainsaws in a variety of field exercises that simulate tree removal operations. Additional exposure to relevant pieces of industry equipment will be included.

## **10-001-136 Nursery Management 1 (2 cr.)**

Provides an overview of landscape nursery production and retail garden center operations. Special attention will be given to basic business strategies and fall-season plant management practices.

## **10-001-140 Plant Diagnostics (2 cr.)**

Covers the science of making proper diagnoses of plant insects and disease problems and appropriate control strategies. Students will learn the difference between signs and symptoms and identification of problem plants.

## **10-001-142 Horticulture Work Experience 2 (2 cr.)**

A two-credit course that deals with independent horticulture/landscape work experience, which is planned with each student and FVTC staff. Department consent is required.

## **10-001-143 Horticulture Work Experience 3 (3 cr.)**

A three-credit course that deals with independent horticulture/landscape work experience, which is planned with each student and FVTC staff. Department consent is required.

## **10-001-158 Woody Ornamental Plant ID (3 cr.)**

Explains plant classification and identification techniques. Students will utilize these techniques to properly name and identify commonly used deciduous and evergreen trees and shrubs. Culture and care will also be discussed.

## **10-001-159 Survey of Herbaceous Plants (3 cr.)**

Studies commonly used annual, bulb and perennial herbaceous plants, with an emphasis on their use in the landscape, culture and care.

## **10-001-160 Horticulture Proposals & Technical Reports (2 cr.)**

Uses a practical approach to training students how to develop forms, write proposals, deliver presentations, and prepare technical reports.

## **10-001-170 Landscape Plants, Maintenance of (3 cr.)**

Studies the maintenance and care of woody plants, including evergreens, vines, garden flowers, bulbs and nursery stock. Discusses pruning, training, fertilizing, watering, planting, physical and chemical control of plant growth, transplanting, winterizing, weed control and production.

## **10-001-173 Urban Tree Maintenance (2 cr.)**

Addresses the art and science of tree pruning as the primary objective of this course. Young tree training and mature tree maintenance are practiced. Proper pruning cuts and techniques specified in the ANSI A300 Pruning Standard are taught throughout this class.

## **10-001-174 Landscape Design 1 (3 cr.)**

Focuses on the landscape design process through the understanding of concepts such as outdoor room, design principles, site function and form composition. The course also includes drafting, site analysis and graphics.

## **10-001-175 Landscape Design 2 (2 cr.)**

Teaches students to design and detail landscape projects. Topics covered will include construction elements, elevations, 3D imagery, and simulated walk-throughs using CAD Landscape Design Software.

## **10-001-181 Landscape Construction 1 (3 cr.)**

Covers site conditions, landscape tools, and design plan implementation.

## **10-001-184 Landscape Design 2 (3 cr.)**

Teaches students to design and detail landscape projects with construction documents and estimates. The course will also focus on specialty landscape.

## **003 Agribusiness Facilities & Equipment**

### **10-003-110 Agriculture Hydraulic Systems (2 cr.)**

Introduces the student to the fundamentals of fluid power, components, different hydraulic systems, hydraulic schematics and terminology of the hydraulic systems used on modern agriculture mobile equipment. Includes operation of fluid flow on various systems, maintenance and system diagnostics. Students are exposed to the special tools used to test hydraulic systems. The use of these special tools and technical manuals are stressed.

### **10-003-115 Agriculture Air Conditioning (1 cr.)**

Provides theory of operation, service and testing of air conditioning units used to cool operator's cab of modern equipment. Students will have lab work consisting of leak detection, evacuation, charging of systems, R-12 to R134A conversions, electrical circuits and diagnostics of systems. Students will have the opportunity to apply for the Wisconsin State Air Conditioning Certification.

### **10-003-118 Ag Diesel Engine Systems (3 cr.)**

Introduces the basic knowledge of a diesel combustible engine. Students will learn the skills and knowledge needed to diagnose, maintain and adjust diesel engines found in agricultural machines and equipment. Use of technical manuals and precision measuring equipment is stressed.

### **10-003-120 Ag Planting Equipment (3 cr.)**

Provides a comprehensive study of planting equipment. There will be extensive coverage of planting and seeding equipment. Units to be covered will include no-till drills, corn planters and seed metering units. Students will work with the seed metering test stand to rebuild and calibrate the seed meters.

### **10-003-121 Ag Grain Harvesting (3 cr.)**

Provides theory of operation, adjustments and service repair of grain and forage harvesting equipment. Lab work includes hands-on service of combine and forage harvesting equipment. Machines covered include combines, self-propelled and pull-type forage harvesters, round, small and large square balers.

### **10-003-123 Agriculture Power Transmission (4 cr.)**

Provides theory and power flow of various transmissions used on agriculture power driven equipment. Includes collarshift, synchronized and powershift transmissions. Also covers differentials, final drives, PTO clutches and tractor clutches. Proper use of spatiality tools and technical manuals is stressed.

### **10-003-126 Skid Loader/Compact Equipment (3 cr.)**

Provides the knowledge and skills needed to operate, diagnose and repair skid loaders and telehandler equipment. Involves areas of training of both in electrical, hydraulics, drive transmissions, operational adjustments and operation. It is recommended to have successfully completed Electrical and Ag Hydraulics.

### **10-003-127 Introduction to Agriculture Engineering Technology (3 cr.)**

Studies engineering concepts and principles as they apply to farm power and machinery, electrical energy and processing, structures and environment, irrigation and drainage, and food engineering. The laboratory will provide an opportunity to develop techniques in design, planning, construction and performance evaluation.

### **10-003-130 Agriculture Forage Harvesting Equipment (2 cr.)**

Focuses on forage harvesting equipment. Students will perform necessary adjustments and repairs associated with the forage harvesting equipment.

### **10-003-131 Ag DC Electrical Systems (3 cr.)**

Focuses on DC electron flow theory, different types of circuits and troubleshooting the circuits. Students will also use schematics to diagnosis problems. Starting and charging systems will be covered.

### **10-003-132 Advanced Ag Hydraulic Systems (2 cr.)**

Provides students the opportunity to work with various types of hydraulic systems used on agriculture equipment. They will do testing, diagnostic and repair of these systems. Students will need to complete Agriculture Hydraulic Systems before enrolling in this class.

### **10-003-133 Dealership Parts/Service (3 cr.)**

Introduces the student to the role and function of the parts and service department of a dealership. Included are service reports, repair orders, warranty process, computerized parts invoicing, parts inventory, merchandising and customer relations. Students will work with a parts and service software program.

# Course Descriptions

## **10-003-134 Shop Tool/Safety Principles (3 cr.)**

Focuses on equipment shop safety, correct tool usage and types of fasteners. Students will perform some basic duties in the shop using different types of tools and fasteners. Students will gain knowledge of the different types of tools and fasteners. They will also learn and perform some basic welding and cutting torch applications.

## **10-003-135 AG Diesel Engine Technology (5 cr.)**

Provides the knowledge and skills needed to maintain, do adjustments and repair of a diesel engine. Students will learn the different functions of a diesel engine. Use of technical service resources and precision measuring is stressed.

## **10-003-136 AG DC Electronic Systems (3 cr.)**

Focuses on electrical and electronic circuits used on DC electrical systems in agricultural equipment. Students will develop the knowledge and skills associated with diagnosing and troubleshooting these circuits. Students will learn the functions of the electronic systems. Computer use will be stressed.

## **10-003-137 Precision Equipment Systems (3 cr.)**

Introduces the student to the different precision farming GPS systems used on agriculture equipment. Students will learn proper set-up and installation of the systems. Students will work in the field with adjustments and settings as well as the GPS display and the different functions.

## **10-003-138 Agriculture Dealership Internship (2 cr.)**

Recognizes that working in industry is a valuable experience for the student. Students will perform jobs and duties that a service technician would. The student is required to work 144 hours in a service related field associated with agriculture equipment. The employer will evaluate the student.

## **10-003-139 Agriculture Student Development (1 cr.)**

Finalizes what the student has learned, which will show how well the student has obtained some of the knowledge and skills needed before entering into their career. This will be a capstone course for the student. Students will be assessed in the program outcome areas.

## **006 Agribusiness & Science Technology**

### **10-006-102 Integrated Pest Mgmt & Weed Identification (3 cr.)**

Acquaints students with the general use, safety, laws and regulations for chemical application in Wisconsin. Completion of the Wisconsin Commercial Applicators Certification is an optional portion of the course. Identification of the major weeds found in Wisconsin crop lands is emphasized.

### **10-006-103 Agricultural Marketing (3 cr.)**

Explores and gives the student an understanding of the basic principles of marketing and the ability to apply these principles to the distribution of farm products.

### **10-006-104 Ag Production Systems (3 cr.)**

Introduces the student to methods and equipment used on farms and agribusiness for facilities, dairy equipment, feed, grain, animal waste storage, and handling systems. Covers the collection, storage, treatment, application and equipment used in nutrient management. Modern robotic milking systems will be covered in the class.

### **10-006-109 Crop Scouting Training (3 cr.)**

Includes hands-on identification and management of insects, diseases and seedling weeds found in Wisconsin crops. Crop development and herbicide damage issues will also be covered.

### **10-006-113 Dairy/Livestock Nutrition (3 cr.)**

Acquaints the students with the nutrients essential for livestock growth, production and reproduction. The anatomy and physiology of digestion and nutrient absorption will be discussed for the single stomach and ruminant animal. Proper feed sampling techniques, feed analysis and other nutritional information will be covered in preparing the student for Dairy/Livestock Ration Balancing.

### **10-006-114 Dairy/Livestock Ration Balance (3 cr.)**

Teaches students the mechanics of balancing livestock rations using the National Research recommendations and other information. Computers will be used to develop rations. The makeup and functions of the nutrients essential for livestock will be discussed in the preparation of dairy and beef rations. The student will complete a cost analysis of all rations.

### **10-006-116 Agribusiness Work Experience (3 cr.)**

Provides independent agribusiness work experience in cooperation with an employer and FVTC. Students are evaluated by the employer and supervised during the work experience by a FVTC instructor. Department consent required.

### **10-006-119 Agricultural Crop Production (3 cr.)**

Prepares students to recognize and implement basic crop production management techniques for corn, soybeans, alfalfa, small grains and general forages used on Wisconsin farms. Field preparation, fertility, seed selection, planting and in-season management of specific crops will be emphasized.

**10-006-133 Introduction to Agribusiness (3 cr.)**

Provides an overview of, and exploration into career pathways and employment opportunities, in the agricultural industry. Key issues discussed include trends and economic concepts of production, marketing and consumption of agriculture products, principles of management, and financial management.

**10-006-134 Agribusiness Sales (3 cr.)**

Covers the basic principles of agribusiness sales. Topics include recognizing potential customers, building a positive customer relationship, designing sales plans, and using market and sales databases. The concepts will be presented using hands-on activities. Students will complete a sales project and presentation.

**10-006-140 Animal Science Fundamentals (3 cr.)**

Provides fundamental knowledge of the animal science field. Topics include animal health, animal environments, anatomy and physiology, genetics and reproduction, animal feedstuffs, and job-related safety. Students will experience animal concepts through the completion of hands-on activities.

**10-006-141 Crop Science (3 cr.)**

Provides fundamental knowledge of the major crops grown in Wisconsin. Topics include crop growth and development, physiology, and nutrition; seed germination and selection; environmental factors and agronomic problems that affect crop development.

**10-006-143 Introduction to Soils (3 cr.)**

Provides fundamental knowledge of soils and growth media. Course topics include soil formation and development, soil components, soil profile, soil classification and soil conservation. Students will experience soils concepts through the completion of hands-on activities.

**10-006-145 Dairy/Livestock Herd Management (3 cr.)**

Covers the herd health and reproductive systems of the dairy and livestock animals. The class will cover various herd health problems, including mastitis, milk fever and similar common livestock health problems. A herd health and reproductive management program will be developed.

**10-006-146 Commercial Vegetable Production (3 cr.)**

Explore planting technology, variety selection, soil fertility, cultural practices, harvest of commercial vegetables, and pest management including disease, insects, and weeds. Common Wisconsin vegetables discussed will include potato, snap beans, canning peas, sweet corn, and smaller volume vegetable crops.

**10-006-148 Dairy Genetics and Reproduction (3 cr.)**

Designed for the student who needs a comprehensive knowledge of dairy genetics and reproduction. Emphasis is on basic genetic principles and sire selection. Students will learn the anatomy and physiology of the bovine female reproductive tract and the management of the estrous cycle in cattle.

**10-006-149 Dairy/Livestock Records Management (3 cr.)**

Acquaints the students with herd management programs using traditional and computerized herd record keeping systems. Students will have hands-on experience with the latest available programs used in dairy record keeping.

**10-006-150 Agronomy Equipment (3 cr.)**

Provides students with an overview of various types of agronomy-related equipment including chemical and fertilizer applicators, planters and grain drills. Equipment operation, maintenance, calibration and safety will be emphasized. Both large and small equipment will be operated during the class.

**10-006-151 Agribusiness Management (3 cr.)**

Focuses on developing management skills and concepts that beginning agri-business professionals' need in today's changing workplace. Emphasis is given to designing and interpreting agriculture production spreadsheets, interpreting agri-business records, and preparing business and family goals. Complete business management plans will be created.

**10-006-154 Precision Ag Overview (3 cr.)**

Provides an overview of precision farming concepts and the tools of precision farming (GPS, GIS and VRT). Covers the introductory use of each of these tools in the processes of a precision farming system. Hands-on activities with real farm data will provide an initial experience in the use of these tools. Economic and environmental benefits will also be discussed.

**10-006-155 Nutrient Management Principles (3 cr.)**

Focuses on balancing commercial crop nutrient products and on farm nutrient credits to formulate economical and environmentally safe crop nutrient recommendations. Students will learn how to complete a nutrient management plan utilizing real farm data.

**10-006-162 Advanced Precision Agriculture (2 cr.)**

Explores future trends in the precision agriculture field. This course will expose students to new and emerging trends as they become available to the agriculture and precision farming industry. Students will learn how the technology works through hands-on activities and will also learn how to adapt the technology to current practices.

# Course Descriptions

## **10-006-163 GIS Applications (3 cr.)**

Prepares students in the use of various Geographic Information Systems utilized in precision farming. Students will learn how to install and set up GIS software, transfer data, process field data, and create reports and/or prescription maps. Students will utilize hands-on computer exercises with real farm data to provide a practical experience.

## **10-006-167 Precision Ag Field Training (3 cr.)**

Provides students with the opportunity to apply coursework to practical, real life work situations. This course is designed to prepare the student with the job skills needed to succeed in the precision agriculture field. There will be actual on-the-job training with required outcomes.

## **10-006-169 Dairy/Livestock Artificial Insemination Records & Management (3 cr.)**

Teaches students about the anatomy and physiology of cattle reproduction and artificial insemination of the bovine species. Topics include estrous cycle and reproductive records management, nutrition, animal fertility, herd health and sire selection. Site visits will be used to practice estrous detection, insemination techniques and computer analysis. Hands-on computer training with Dairy Comp 305 and PCDART will focus on development of herd protocols and their analysis.

## **10-006-170 Animal Health (3 cr.)**

Examines animal health by studying disease etiology, symptoms, transmission, diagnosis, prevention and control. Learners will focus on a variety of species while using proper veterinary terminology as it relates to disease. Additionally, learners will develop a comprehensive preventative medicine plan for a species of interest.

## **007 Biotechnology**

### **10-007-174 Applied Microbiology (4 cr.)**

This survey course includes the structure, function, ecology, nutrition, physiology and genetics of microorganisms in industrial, agricultural, food and medical microbiology. It also includes an introduction to standard techniques and procedures in the microbiology laboratory.

## **057 Natural Resources**

### **10-057-104 Exploring Natural Resources (4 cr.)**

Provides basic study of natural resources, focusing on their abundance, importance and conservation. The physical biological variables of the environment will be studied in field and classroom settings. Career development will be incorporated to expose students to job-related activities for the following core areas: wildlife and fisheries, forestry, surveying, outdoor recreation, soils, and water quality and wastewater management.

### **10-057-106 Surveying 1 (3 cr.)**

Introduces the use of an auto level, laser level and theodolite. Emphasis is on the fundamental concepts and principles of basic topographic surveying and mapping. Several computer programs are used to generate maps.

### **10-057-107 Surveying 2 (3 cr.)**

Acquaints the student to the open and closed traverse and the general methods utilized with the total station and data collector for field data collection. Computer software programs are used to help aid the student in map production.

### **10-057-108 Natural Resource Technical Field Experience (3 cr.)**

Involves fish and wildlife projects identified by the natural resources team. Possible projects include computer work, wetland restoration, GIS and GPS work, fish surveys, prescribed burnings, dike construction, use of tranquilizer dart and blow guns, and sturgeon data collection.

### **10-057-109 Ecology (2 cr.)**

Examines the relationships and interrelationships of living organisms in their environment. Students study natural selection and speciation, environmental conditions, populations and competition, succession, energy flow and biogeochemical cycles, and the diversity of ecosystems.

### **10-057-128 Wildlife Mgmt - Nongame and Hunted Species (3 cr.)**

Introduces wildlife ecology and management. The course focuses on habitat restoration and maintenance, deer management, wildlife damage control, ecological concepts and population dynamics.

### **10-057-129 Fish Mgmt-Ichthyology,Limnology/Field Pract (3 cr.)**

Students will learn about fish identification and classification, and lakes and streams as a life environment. Field techniques and practices used in studying and managing fish will be presented. Several hands-on field experiences are conducted.

**10-057-130 Recreation Facilities Maintenance (3 cr.)**

Introduces general maintenance activities applied at recreation facilities through a combination of lecture, lab and fieldtrips. Planning and maintenance of various recreation trail types and facilities along with the operation and maintenance of chainsaws, brush saws and lawn care equipment.

**10-057-131 Forest Recreation Environmental Education (3 cr.)**

Emphasis will be creating and presenting environmental education activities to various audiences. The design and delivery of environmental curriculum is the focus and will be augmented with additional public presentations and volunteering at area environmental centers. Individual and group laboratory projects and presentations are required.

**10-057-132 Forestry 1 (3 cr.)**

Covers tree and shrub identification (dendrology), forest mapping, stand inventory, basic forest ecology, silvicultural practices and timber types. This course prepares students to perform more specific job-related tasks in Forestry 2.

**10-057-133 Forestry 2 (3 cr.)**

A continuation of Forestry 1 with studies of aerial photography applications, logging operations, lumber scaling and grading, fire weather and fire suppression, tree planting and seeding operations, forest diseases and insects of the lake states. It culminates with field trips to natural resource agencies to view the practices and principles learned during class.

**10-057-134 Soil and Water Conservation (3 cr.)**

Examines the physical, chemical and biological properties of soil in relation to water and wind erosion. The identification, planning and use of soil and water conservation practices are examined, and students study the relationship of soil fertility to conservation and management.

**10-057-135 Soil and Water Conservation/Engineering (3 cr.)**

Explores in greater detail soil and water conservation practices including planning, design, quantities, cost lists and field layout. Auto level, theodolite and laser level will be used throughout class. Field locations will help familiarize students with the standards and specifications used in the design of structural and vegetable erosion control practices. Proper construction and maintenance of these practices are stressed.

**10-057-136 Environmental Water Quality (3 cr.)**

Examines the physical, chemical and biological characteristics of surface and groundwater. Water quality standards and regulations are discussed. Surveys of the various forms and sources of water pollutants are conducted, and water quality assessments, using biological indicators and chemical tests, are covered. The course includes a brief overview of the treatment process.

**10-057-137 Wastewater Management (3 cr.)**

Studies in waste treatment systems in detail, including the collection, handling and disposal of wastewaters and sludges. Laboratory work emphasizes the tests and methods used to evaluate the performance of treatment units.

**10-057-140 Plant Identification (1 cr.)**

Provides a basic study of the trees, grasses, herbs and aquatics of Wisconsin. The class focuses on the principal species of seven major plant communities: forest, bog, agriculture, prairie, marsh, shrub and beach.

**10-057-142 Natural Resources Co-op Experience (2 cr.)**

Enables the student to volunteer 80 hours of service to one or more natural resource agencies for approved job training. The student's progress is monitored by the instructor through direct communication with the participating agency. This course is taken in the fall semester of a student's final academic year.

**10-057-143 Natural Resources Common Topics (2 cr.)**

Introduces U.S. public land surveys, topographic maps, orienteering principles and mapping. Other topics include the polar planimeter, dot grid, abney levels and clinometers, basic aerial photo uses, and chainsaw use and maintenance.

# Course Descriptions

## 058 Wildland Firefighter AAS

### 10-058-160 Wildfire Intro S130/S190/L180 (2 cr.)

Prepares new firefighters in basic firefighting skills and behavior factors that will aid them in the safe and effective control of wildland fires.

### 10-058-162 S212 Wildland Fire Chain Saws (1 cr.)

Provides introduction to the function, maintenance and use of internal combustion engine-powered chainsaws and their tactical wildland fire application.

### 10-058-169 Ecosystem Management (2 cr.)

Explores the role of fire in biotic and abiotic systems. This class builds from the individual to the ecosystem and incorporates human influence.

### 10-058-181 Prescribed Fire (1 cr.)

Consists of student participation in prescribed fire application for management and fuel reduction objectives. Emphasis will be on safety, ignition patterns and holding crews.

### 10-058-182 Fire Prep (1 cr.)

Prepares the student for fire season. Topics include writing burn plans, burn site checks, equipment inventory, organization and maintenance.

## 080 Farm Operations

### 31-080-305 Computers, Farm (1 cr.)

Designed to allow students to operate and explore the utilization of computers and computer software for production agriculture application. Computer use and the latest in agricultural software will be emphasized.

### 31-080-311 Introduction to Precision Agriculture (1 cr.)

Provides the students with an introduction to common Precision Agriculture technologies used in crop production today. Topics include satellite technology, hardware, data collection, guidance methods and yield monitors. The challenges and benefits of adopting Precision Agriculture technologies on the farm will also be discussed.

### 31-080-312 Crop Management Principles (1 cr.)

Covers the basic principles and management techniques for corn, soybeans, alfalfa, and small grains grown on Wisconsin farms. Includes information on field preparation, pest management, seed selection, soil quality, and in-season management of specific crops.

### 31-080-313 Basic Shop Principles (1 cr.)

Introduces basic shop & equipment safety, common shop practices, tool identification, and use of operator's manuals. Basic hydraulic principles will also be introduced.

### 31-080-321 Farm Data Management (1 cr.)

Stresses that using technology to keep accurate records is vital for the farm of the future. This course will build upon the technologies discussed in the Introduction to Precision Agriculture course. Topics include the collection, cleanup, and analysis of Precision Agriculture. Data management and privacy will also be covered.

### 31-080-322 Forage Management (1 cr.)

Introduces basic management concepts of Wisconsin forage crops. Course will focus on production practices and management for desired quality and yield of forage legumes and grasses.

### 31-080-350 Animal Nutrition, Basic (1 cr.)

Acquaints the student with the nutrients essential for livestock growth, production and reproduction. The anatomy and physiology of digestion and absorption are discussed for single stomach and ruminant animals, with the emphasis on dairy cattle.

### 31-080-353 Soil Principles and Fertilization (1 cr.)

Acquaints the student with the physical, chemical and biological properties of soil in relation to fertility and good soil management. The students will sample soils on their farms and identify fertility needs from the soils test report. Nutrient management will be discussed.

### 31-080-355 Tractor Maintenance Overview (1 cr.)

Provides to the student basic diesel engine system operation and maintenance skills and knowledge to maintain the fuel, cooling and lubrication systems on tractors and other agricultural machinery.

### 31-080-356 Agricultural Building Design & Construction (1 cr.)

Acquaints the student with planning, design and construction skills for agriculture facilities. This course focuses on the selection of building materials, cost and construction of farm buildings.

### 31-080-357 Advanced Tractor Maintenance (1 cr.)

Provides the students with knowledge and skills needed to maintain and service the electrical systems associated with farm machinery. Students will perform basic service on the different electrical systems.



**31-080-360 Farm Management Overview (1 cr.)**

Focuses on management skills and concepts that beginning producers need to continue farming in today's changing technology. Emphasis is given in establishing and recording farm business records, business and family goals. Entire farming operation is assessed and plans are developed for farm management decisions.

**31-080-361 Nutrient Management Principles (1 cr.)**

Enables the student to develop, write and manage a nutrient management plan for their farm operation or a selected Wisconsin farm. Components of a plan, laws affecting a plan and completion of a plan are emphasized.

**31-080-365 Farm Business Management, Analysis, Finance (1 cr.)**

A study of business management principles and practices including financing, business analysis, budgeting, capital acquisition, land acquisition and types of business organizations will be discussed in relation to the student's farming operation. Basic farm business analysis will be completed for the individual's farm. Short- and long-range plans will be established for the operation.

**31-080-366 Livestock Ration Balancing (1 cr.)**

Introduces the student to the mechanics of balancing livestock rations using the National Research Council tables. They will be shown how computers can be used to develop rations. The makeup and functions of the nutrients essential for livestock will be discussed in the preparation of dairy rations for the home herd. A cost analysis of all rations will be completed by students for dairy herds and other livestock enterprises.

**31-080-367 Agricultural Marketing (1 cr.)**

Covers and analyze the various marketing channels for farm products in this one-credit class. The buying and selling of feed components as well as the marketing of excess dairy cattle and young stock will be discussed. Agricultural organizations which play a part in the agricultural marketing system and acquaint the student with the future's market.

**31-080-368 Dairy Management and Records (1 cr.)**

Covers the basic dairy management principles used in today's modern dairies. Enables students to analyze dairy records to make management decisions. Aspects of mating and selecting sires to improve various aspects of a dairy cow will be discussed.

**31-080-369 Cash Crop Principles (1 cr.)**

Enables students to develop management and production strategies for corn, soybeans, and related grain crops of Wisconsin.

**31-080-371 Farm Machinery Maintenance, Planting Equip. (1 cr.)**

Deals with the various aspects of farm machinery maintenance, including the selection of components and their replacement. Students will maintain and troubleshoot farm machinery, electrical systems, such as monitors, special lighting, and electrical solenoids and controls. Planting equipment will be adjusted, calibrated and selected.

**31-080-372 Farm Facilities (1 cr.)**

Studies the various types of dairy / livestock facilities, storage and materials handling systems on farms. The student will look at planning, design, cost and management of their livestock or cash crop operation.

**31-080-374 Advanced Precision Agriculture (1 cr.)**

Covers advanced technologies utilized in precision agriculture. Topics include the following: variable rate control of seed, chemicals, and fertilizer; advanced planter monitors; automatic section control; and remote crop health sensing technologies. The economics of adopting these technologies will also be discussed.

**31-080-375 Small Engines (1 cr.)**

Trains students on the basics of small engines; including small engine maintenance and repair, lubrication, and troubleshooting.

**31-080-380 Herbicide and Pesticide Application (1 cr.)**

Enables the students to become familiar with the equipment used to handle and apply herbicides, pesticides and fertilizer. Both calibration and safety with all types of farm sprayers and applicators are emphasized. Proper chemical selection for crops and basic weed ID will be emphasized.

**31-080-381 Livestock Overview (1 cr.)**

Covers the importance of livestock to our society while emphasizing breed identification, safety, livestock handling, anatomy and physiology, genetics, animal breeding systems and reproduction. Care and management of youngstock will be compared across the livestock industries.

**31-080-382 Dairy Herd Health and Reproduction (1 cr.)**

Covers the reproductive systems of the dairy animal. The class will cover various herd health problems including mastitis, milk fever and similar common dairy cattle problems. A herd health management and reproductive management program will be developed for the home farm.

# Course Descriptions

## **31-080-395 Welding Repair and Maintenance (1 cr.)**

Emphasizes the use of M.I.G., arc and the oxyacetylene welding equipment in the repair and maintenance of farm machinery. The student will learn the basics of each of the systems. The expansion and contraction of metals, removal of bearings, and use of special rods and equipment will be emphasized.

## **31-080-396 Forage & Grain Harvesting Equipment (1 cr.)**

Provides students with a comprehensive knowledge of forage and grain harvesting equipment. Emphasis is on design, operation, adjustments and maintenance of the equipment. Farm machinery management and operational expenses will also be stressed.

## **090 Farm Business & Production Management**

### **30-090-381 Farm Business, Operating a (3 cr.)**

Focuses on management skills and concepts that first-year students need to continue farming in today's changing technology. Emphasis is given in establishing and recording farm business records and family goals. Students will organize and maintain farm business records and analyze them to make sound farm management decisions. Entire farming operation is assessed and plans are developed for future needs and goals. Classes are held throughout the year and include classroom and on-farm instruction.

### **30-090-382 Soil Management (3 cr.)**

Prepare and implement a land use plan, conduct soil testing procedures and interpret reports. This session also emphasizes the analysis of the farm business and planning of cropping strategies. Classes are held throughout the year and include classroom and on-farm instruction.

### **30-090-383 Crop Management (3 cr.)**

Focuses on crop production, management and economics. Specific topics relate to variety, selection, planning, pest control, harvesting, storage, safety and marketing. The farm cropping program is an integral part of the total farm business management plan. Classes are held throughout the year and include classroom and on-farm instruction.

### **30-090-384 Livestock Nutrition (3 cr.)**

Focuses on the skills, techniques and concepts necessary for sound feeding management. Topics include determining feed values, economics of feed, nutritional terminology and requirements, feed consumption of livestock, understanding feed tag labels for protein, energy, minerals and vitamins. Evaluation of base feed and feeding programs, and metabolic disease of lactating livestock. Classes are held throughout the year and include classroom and on-farm instruction.

### **30-090-385 Livestock/Farmstead Equipment Management (3 cr.)**

Includes various phases of selection, breeding, herd health, and the raising and marketing of livestock and livestock products. Students will learn the selection, operation and maintenance of milking, feed, ventilation, manure handling, equipment and farm buildings. Using a business analysis, they will understand how the livestock program is related to the total farm enterprise. Classes are held throughout the year and include classroom and on-farm instruction.

### **30-090-386 Farm Records and Business Analysis (3 cr.)**

Covers the practical use of a farm record system in managing the farm and financial analysis. Topics include the establishment of farm business goals, selection and use of farm credit, farm business arrangements, farm estate planning, and farm income taxes. Use of computers and/or computer records and financial analysis of farm business and finance strategy to meet the students' needs. Production and financial decisions will be based on students' farm business analysis. Classes are held throughout the year, and include classroom and on-farm instruction.

### **30-090-388 Precision Agriculture (3 cr.)**

Provides an overview of precision ag farming concepts and the tools used in precision farming. Topics include implement setup and field tools, monitors, documentation, data collection, and data analysis.

### **30-090-389 Farm Safety and Personnel (3 cr.)**

Addresses general farm and animal safety guidelines, worker health, human resource management and OSHA regulations. Topics include creating an emergency response farm plan, hazards, personal protective equipment, accident prevention and protection, employee training programs, and livestock quality assurance.

## **30-090-390 Farm Transitions (3 cr.)**

Focuses on different methods and options for transferring a farm or setting up a new farm business enterprise. Topics include family communications, business entities, business principles, business planning, retirement planning, transfer planning and expansions.

## **30-090-391 Ag Commodities and Marketing (3 cr.)**

Addresses techniques and concepts necessary for creating and implementing ag marketing on an operation. Topics include marketing strategies, ag commodity marketing, direct marketing, risk management and regulatory policies.

## **101 Accounting**

### **10-101-102 QuickBooks Accounting Applications (1 cr.)**

Lays the foundation for students to gain experience using QuickBooks Pro. Students practice creating a company using a chart of accounts, creating vendors and customers, demo payroll, record transactions, and generate and use financial reports. Being familiar with Windows, business experience or completion of an accounting course is helpful.

### **10-101-103 Sage Accounting Applications (1 cr.)**

Lays the foundation for students to gain experience using Sage Accounting. Students practice creating a company using a chart of accounts, creating vendors and customers, record payroll and other transactions, and generate and use financial reports. Being familiar with Windows, business experience or completion of an accounting course is helpful.

### **10-101-107 Accounting, Principles of (3 cr.)**

Introduces basic concepts and general principles of accounting to non-accounting students. Topics include financial statements, merchandising accounting for cash, inventory, payroll, budgeting and accounting software.

### **10-101-126 Integrated Acctg. Systems on Microcomputers (2 cr.)**

Explores manual and computerized accounting systems. Students examine the design of the systems and the internal controls necessary to achieve accurate, timely and relevant information. They use a commercial accounting software package to demonstrate proficiency.

### **10-101-130 Cost Accounting A (2 cr.)**

Presents fundamental cost accounting concepts and objectives as well as comprehensive illustrations of the flow of costs in manufacturing systems. The planning and control phases of cost elements (material, labor and factory overhead) are covered in relation to job order and process costing systems. Additional topics include CVP analysis and ABC management.

### **10-101-131 Cost Accounting B (2 cr.)**

A continuation of Cost Accounting A. Students learn about tools for planning and control through budgeting and variance analysis, inventory costing and management using JIT, MRP and back flushing and also understand accounting aspects of department and product costs.

### **10-101-145 Spreadsheets, Beginning (1 cr.)**

Covers developing, constructing and printing basic business-related worksheets and reports using spreadsheet software. Students create, modify and print various charts based on worksheet data.

### **10-101-150 Income Tax Accounting A (2 cr.)**

Studies simple individual federal income tax returns. The course covers income tax withholding and basic reporting requirements, basic income taxes, simplified federal returns, general purpose returns, interest, dividends, business expenses and supplemental income.

### **10-101-151 Income Tax Accounting B (2 cr.)**

Introduces cost recovery and depreciation, itemized deductions, supplemental income activities, capital gains and losses, tax credits and alternative minimum tax, installment sales and withholding. Students examine the tax forms that are appropriate for each topic.

### **10-101-152 Spreadsheets, Intermediate (1 cr.)**

Covers developing and editing business-related worksheets. Students examine various functions such as If, Round, Sum, Average and Pmt. They also use Data Tables, Goal Seek, Scenarios and Solver to assist in decision making.

### **10-101-154 Spreadsheets, Advanced (1 cr.)**

Introduces spreadsheet topics and functions that enhance student expertise.

### **10-101-157 Accounting Applied Project (2 cr.)**

Applies the theories, skills and techniques studied in the Accounting program to an industry related project

### **10-101-158 Accounting Internship (2 cr.)**

Provides on-the-job supervised work experience in the accounting industry. Weekly seminars and/or assignments emphasize career-related topics. Each student completes a minimum of 72 hours working as an intern along with classroom experiences

# Course Descriptions

## **10-101-160 Communication Software, Intro to (1 cr.)**

Introduces Word and PowerPoint using accounting examples and applications. The emphasis is on effective communication using printed documents. The course includes a presentation using accounting materials.

## **10-101-164 Accounting Database Applications (2 cr.)**

Covers the creation of database applications using Excel and Access. It includes the integration and manipulation of data and the creation of reports.

## **10-101-166 Advanced Software Integration (2 cr.)**

Presents the advanced concepts of word processing, spreadsheet, presentation and database software. Students integrate data within the various software and create and present a project.

## **10-101-180 Financial Accounting 1 (4 cr.)**

Prepares students to analyze, record, summarize and interpret accounting information. The course focuses on business transactions, financial statements, merchandising, inventory, special journals, internal controls, receivables, plant assets and payroll.

## **10-101-181 Financial Accounting 2 (4 cr.)**

Presents basic concepts for partnerships and corporations. It introduces bonds, cash flow statement preparation, financial statement analysis, budgeting and job cost procedures. The course includes a practice set using job costing.

## **10-101-182 Intermediate Accounting (4 cr.)**

Reviews accounting and recording processes, temporary investments, cash flows, revenue recognition and financial statement analysis.

## **10-101-183 Intermediate Accounting 2 (4 cr.)**

Focuses on inventory, long-term debt financing, intangible assets, stockholder equity, long-term investments in equity securities, bonds, leases, acquisitions and retirement of operational asset depreciation and depletion.

## **10-101-186 Income Tax Accounting (4 cr.)**

Emphasizes correct completion of simple mid-level individual federal income tax returns and forms. Focuses on income tax withholding and basic reporting requirements, interest and dividends, business expenses, itemized deductions, capital gains and losses.

## **10-101-187 Payroll Accounting (3 cr.)**

Presents payroll calculation and preparation of payroll-related entries. Topics include federal and state laws, calculation and payment of payroll taxes, completion of government forms and journal entries. A computer practice set is included. Proficiency with electronic calculators is recommended.

## **10-101-190 Financial Fraud Detection, Fundamentals of (1 cr.)**

Focuses on accounting information systems and accounting processes related to sales, purchasing, etc. Covers internal controls designed to mitigate and prevent financial fraud.

## **10-101-192 Accounting for Business (3 cr.)**

Focuses on business and accounting terminology and how to record transactions for a service business. It covers payroll accounting, banking procedures, the accounting cycle, and the accrual basis of accounting for a merchandising business. Students complete a practice set and solve problems using the computer.

## **10-101-193 Great Plains-Enterprise Resource Planning System (1 cr.)**

Gain experience working on Great Plains software, Enterprise Resource Planning Systems. Learn how to build the Chart of Accounts, set up the company's accounting system, enter monthly transactions and run financial statements for multiple accounting periods.

## **10-101-194 Payroll (2 cr.)**

Presents payroll calculation and preparation of payroll. Topics include federal and state laws, calculation and payment of payroll taxes, completion of government forms. Proficiency with electronic calculators is recommended.

## **10-101-195 Advanced Payroll (1 cr.)**

Presents preparation of payroll-related journal entries. A computer practice set is included. Proficiency with electronic calculators is recommended.

## **10-101-196 Accounting Capstone (2 cr.)**

Provides students an opportunity to demonstrate their attainment of program outcomes through the completion of a project which accounts for a small business through the accounting cycle using accounting software and completion of the personal income tax return using income tax preparation software.

## 102 Paralegal, Banking & Entrepreneurship

### 10-102-103 Business Law 1 (3 cr.)

Introduces legal principles and standard business law concepts and their implications for business. It emphasizes contracts, sales, commercial paper, bailment, agency and real property, with references to the Uniform Commercial Code and recent consumer legislation.

### 10-102-105 Business Management Internship (3 cr.)

Provides on-the-job supervised work experience in various businesses. Each student completes a minimum of 144 hours working as an intern. Completion of a minimum of 34 program credits is highly recommended.

### 10-102-106 Business Management Internship (2 cr.)

Provides on-the-job supervised work experience in various businesses. Weekly in-school seminars emphasize career-related topics. Each student completes a minimum of 144 hours working as an intern. Course is designed for the student to take during the final semester of the program.

### 10-102-112 Business, Introduction to (3 cr.)

Provides an overview of the variety of activities in the world of business. It focuses on the responsibilities connected with operating a business from both organizational and managerial viewpoints. It also examines the role of government in business.

### 10-102-138 Biz Squad Internship (3 cr.)

Establishes an opportunity for students to apply training and skills learned while participating on a multidisciplinary consulting team. The team will develop a strategic plan for a specified business. Students contract with the business and course instructor(s) to complete a project to the parameters mutually identified by the business and the instructor(s). Evaluation of the student's performance will be a cooperative effort between the members of the Biz Squad, instructor(s) and the business clients.

### 10-102-157 Business Law 2 (3 cr.)

Discusses employment, business organizations, ethics, computer law and insurance.

## 103 Computer Software

### 10-103-102 QuickBooks (1 cr.)

Provides students with experience in using the QuickBooks accounting software package. Students learn how to use the software and create a chart of accounts and enter various business transactions. Through these hands-on experiences, students should be able to convert their knowledge to any other software package as needed.

### 10-103-105 Introduction to Adobe Acrobat (1 cr.)

Learn how to create, modify, print, view, and distribute PDF documents. Learn how to protect sensitive documents; send and track a PDF document; convert a Web page to PDF format; add bookmarks/links to online PDF documents; fill out and submit electronic PDF forms; and more.

### 10-103-109 Technology Tools for Marketing (2 cr.)

Introduces students to the fundamentals of digital image and video production. Students will learn how to edit videos as well as images for web, mobile, social and online advertising. In addition, students will learn how to publish video and images online.

### 10-103-120 MS Office Suite, Introduction (2 cr.)

Provides an opportunity to gain technical skills employers are seeking, by using the features in Outlook, Word, Excel, and PowerPoint. Through hand-on course work, students will be able to integrate Word, Excel and PowerPoint.

### 10-103-145 MS Excel 2010 Introduction (1 cr.)

Presents basic features of Microsoft Excel. Learners develop basic skills to create, edit, and format worksheets; use functions; set print options; add visual elements; work with multiple worksheets, tables, and other file formats; and integration with Word.

### 10-103-150 MS Word 2013 Introduction (1 cr.)

Presents the basic features of Microsoft Word. Learners create, edit, and save documents, format characters, paragraphs, pages and documents, and apply special features when formatting.

### 10-103-152 MS Excel 2013 Introduction (1 cr.)

Presents basic features of Microsoft Excel. Learners develop basic skills to create, edit and format worksheets; use functions; set print options; add visual elements; work with multiple worksheets, tables and other file formats.

# Course Descriptions

## **10-103-154 MS PowerPoint 2013 Introduction (1 cr.)**

Presents the basic features of Microsoft PowerPoint. Learners create, edit and animate presentations, work with tables, charts, graphics and custom shows, and learn to share and protect presentations.

## **10-103-156 MS Access 2013 Introduction (1 cr.)**

Presents the basic features of Microsoft Access. Learners enter and edit data in tables, create and apply queries, produce reports and forms.

## **10-103-180 MS Word Introduction (1 cr.)**

Presents the basic features of Microsoft Word 2016. Learners create, edit, and save documents, format characters, paragraphs, pages and documents, and apply special features when formatting.

## **10-103-181 MS Excel Introduction (1 cr.)**

Presents basic features of Microsoft Excel 2016. Learners develop basic skills to create, edit, and format worksheets; use functions; set print options; add visual elements; work with multiple worksheets, tables, and other file formats; and integration with Word.

## **10-103-182 MS Access Introduction (1 cr.)**

Presents the basic features of Microsoft Access 2016. Learners enter and edit data in tables, create and apply queries, produce reports and forms, import and export data, and integrate Access data with other programs.

## **10-103-183 MS PowerPoint Introduction (1 cr.)**

Presents the basic features of Microsoft PowerPoint 2016. Learners create, edit and animate presentations, work with tables, charts, graphics, and custom shows, and learn to integrate, share and protect presentations.

## **104 Marketing**

### **10-104-100 Digital Marketing (3 cr.)**

Introduces principles and best practices for digital and interactive marketing, and online marketing strategies. Focusing on Web site development and analysis, students gain an understanding and appreciation of the importance and relevance of the Internet/Web as a marketing tool in the increasingly competitive marketplace.

### **10-104-101 Marketing Analytics (3 cr.)**

Explores how marketing measurements can validate a business's marketing programs, operating efficiencies and customer service initiatives. Marketing analytics helps marketers to be more efficient in their careers and minimizes waste and misdirections related to industry data.

### **10-104-103 Integrated Marketing Communications (3 cr.)**

Utilizes processes related to creating strategic communications to build brand equity. Students will develop unified strategies and marketing campaigns, as well as understand the fundamentals of multi-channel advertising and promotions as related to target audiences and the marketing mix.

### **10-104-104 Marketing Plan Development (3 cr.)**

Provides students the opportunity to apply advanced marketing concepts in a capstone project approach. Emphasizes the development, organization, implementation and control of the marketing plan.

### **10-104-105 Marketing Internship (3 cr.)**

Provides on-the-job training that allows students to apply the theories, skills and techniques studied in the program. Students work a minimum of 144 hours in a marketing-related setting. The internship includes weekly discussions related to employment topics.

### **10-104-108 Social Media Marketing Strategy (3 cr.)**

Learn to successfully plan, deploy and establish a brand's social media presence. A mix of online research projects, case studies and class exercises will be used to enhance student knowledge. Social media platforms and analysis tools to develop social media campaigns will also be used.

### **10-104-110 DECA Leadership (1 cr.)**

Helps students to develop their leadership skills through participating in local, state and national Delta Epsilon Chi (DECA) activities. DECA is a national organization for college students preparing for careers in marketing, merchandizing or management.

### **10-104-113 Marketing Research (3 cr.)**

Focuses on the skills and techniques necessary to conduct basic marketing research. It covers problem definitions, planning studies, use of secondary data, questionnaire design and development, instrument administration, and data collection and interpretation.

### **10-104-114 Marketing Management (3 cr.)**

An advanced marketing course that instructs students in creative decision making relative to the marketing mix, channels of distribution and industrial and international marketing. Emphasizes the development, organization, implementation and control of the marketing plan.

**10-104-124 Advanced Sales (3 cr.)**

Analyzes advanced concepts of industrial and services selling with actual application of the selling process. Emphasizes hands-on selling by using analysis tools and group interaction. Develops skills in time management, self-motivation and territorial organization.

**10-104-147 Promotion Principles (3 cr.)**

Examines the theory, practice and management of advertising. Uses a comprehensive advertising project to simulate the decisions and practices made in the real environment. Topics include the development of an advertising plan, selecting the media, budgeting, and the relationship of advertising to the marketing problem and the marketing mix.

**10-104-151 Marketing 1, Principles of (3 cr.)**

Introduces modern marketing practices. The course examines the role played by marketing in society and covers consumer motivation, market segmentation, product development, advertising and channels of distribution.

**10-104-163 Sales Management (3 cr.)**

Gives a detailed look at the position of sales manager as an organizer, administrator and decision maker. Emphasizes the decision-making processes used in sales management.

**10-104-166 Intro to Sales (3 cr.)**

Examines the basic concepts and principles of sales as they apply to retailing. It includes wholesaling and industrial selling, the function of selling in business and living, careers in personal selling, requirements and rewards, buying motives, product knowledge, prospecting and approach, product presentation, sale closing, account servicing and handling objections.

**10-104-182 Customer Relations Management (3 cr.)**

Applies analytical processes to relevant marketing information and reporting systems currently used in business and industry. It focuses on the technical skills needed to develop and use database marketing techniques. Analytical and quantitative applications are emphasized as they relate to statistical measurements.

## 106 Business Technology

**10-106-101 Web Technologies (2 cr.)**

Provides a basic understanding of the Web as well as the tools used to create Web pages, blogs and other features. Reviews social and business Web tools and components. Basic computer hardware and software will also be explored.

**10-106-102 Office Desktop Publishing: MS Publisher (1 cr.)**

Develops skills for working with different types of office documents such as brochures, newsletters and reports. Introduces page layout, graphics, styles and fonts.

**10-106-104 Administrative Professional Capstone (1 cr.)**

Provides an administrative on-campus capstone experience.

**10-106-107 Keyboarding for PC Users (1 cr.)**

Introduces keying by touch. It emphasizes control of the alphabetic keys and the numeric keypad. Practice drills to improve keying skills are included.

**10-106-108 Business Writing and Formatting (3 cr.)**

Focuses on development of spelling, grammar, punctuation and formatting rules as applied to business documents in both print and digital mediums.

**10-106-110 Business Office Simulation (3 cr.)**

Provides the opportunity for students to complete work-related business projects in a simulated environment. Students will demonstrate teamwork and critical thinking skills by integrating knowledge and software skills in word processing, spreadsheet, presentation and database projects.

**10-106-112 Keyboarding Speed Development (1 cr.)**

Focuses on improving typing speed and accuracy through the use of skill-building software. Introduces data entry using the numeric keypad.

**10-106-114 Intro to Administrative Professional Careers (2 cr.)**

Introduces various aspects of administrative professional careers. Explores a variety of topics including career expectations, future employment opportunities and current employment trends.

**10-106-118 Effective Business Practice (3 cr.)**

Provides hands-on experience and practice using a variety of business communication techniques providing students with knowledge, poise, tact and the skills to conduct themselves in the business world with confidence. Included in the course is The 7 Habits developed by Stephen Covey.

**10-106-120 Business Technology Essentials (2 cr.)**

Business Technology Essentials is an introduction to concepts and terminology related to computers as they are used in today's office technology jobs.

# Course Descriptions

## **10-106-121 Office Software Applications (3 cr.)**

Focuses on introductory features and applications of the Microsoft Office Suite. Students will apply introductory software features to the successful completion of business-related projects and scenarios.

## **10-106-122 Trends for Administrative Professionals in Law Enforcement (1 cr.)**

Learn about the newest trends in law enforcement and the impact on the role of the administrative professional. Students will use their critical thinking, decision making, and problem solving skills to further their career.

## **10-106-126 Administrative Management (3 cr.)**

Focuses on the development of administrative management skills, with emphasis in the areas of supervision, managing performance and development of staff, problem solving and team building, and conflict resolution.

## **10-106-128 Advanced Office Software Applications (3 cr.)**

Focuses on advanced features and applications of the Microsoft Office Suite. Students will apply advanced software features to the successful completion of business-related projects and scenarios.

## **10-106-134 Technological Resource Management (3 cr.)**

Focuses on acquirement, maintenance and replacement of technological resources. Examines the need for resource identification and allocation, problem identification, and resolution related to business technologies.

## **10-106-140 Meeting & Event Management Fundamentals (3 cr.)**

Focuses on planning a successful meeting/event. Included are pre-planning activities, managing on-site meeting needs, and conducting follow-up activities.

## **10-106-152 Office Internship (2 cr.)**

Provides on-the-job supervised office work experience in various businesses. In addition, course work will emphasize career related employment topics. Each student must complete 144 hours working as an intern.

## **10-106-160 Business Relationship Development (2 cr.)**

Provides students with opportunity to develop and analyze networking and business relationships. Includes examination of the networking process, tools to facilitate and enhance networking opportunities and networking communication development.

## **10-106-166 Office Fundamentals (3 cr.)**

Focuses on the development of fundamental office skills. Students will gain skill in general office duties, records retention and maintenance, application of office technologies, verbal and written communication, and customer service.

## **10-106-178 Presentation and Training Techniques (3 cr.)**

Develops the skills necessary to prepare, support and facilitate business presentations and training programs.

## **10-106-180 Meeting & Event Management, Adv. Apps (3 cr.)**

Learn to create, market, plan and implement incentive programs and special events. Apply creativity to develop events with unique purposes and presentations combining elements such as site selection, decor, lighting, sound and entertainment as well as food and beverage to reflect the theme of the event.

## **10-106-190 Critical Thinking for Business Professionals (2 cr.)**

Critical thinking and sound decision making skills are essential in today's dynamic business environment. Learn to interact and communicate effectively with people, research and analyze data for business decision making purposes, apply business ethics, and harness the power of business technology to become a well-rounded business professional.

## **10-106-196 Office Software Applications – Access & PowerPoint (3 cr.)**

Focuses on introductory features and applications of the Microsoft Office Access and PowerPoint. Students will apply introductory software features to the successful completion of business-related projects and scenarios. Students will use their critical thinking skills to produce professional documents integrating MS Office Suite, Word, Excel, Access and PowerPoint.

## **10-106-197 Office Software Applications – Word and Excel (3 cr.)**

Focuses on introductory features and applications of the Microsoft Office Word and Excel. Students will apply introductory software features to the successful completion of business-related projects and scenarios. Students will use their critical thinking skills to produce professional documents using MS Word and Excel.



## **10-106-198 Office Software Applications – Critical Thinking Projects (3 cr.)**

Focuses on critical thinking projects related to MS Office Suite, Word, Excel, Access and PowerPoint. Students will apply introductory software features the learned in Office Software Applications (10-106-121) to the successful completion of business-related projects and scenarios. Students will use their critical thinking skills to produce professional documents integrating MS Office Suite, Word, Excel, Access and PowerPoint.

## **107 Information Technology**

### **10-107-110 IT Professional Skills (2 cr.)**

Examines and identifies job-seeking, job-keeping and interviewing techniques, strategies for identifying and meeting external and internal customer needs as well as good listening skills and techniques for dealing with difficult customers. Also covers time management, team dynamics, continual improvement processes and global business practices.

### **10-107-113 Information Technology Internship 1 (1 cr.)**

Allows the student to learn under supervision in a structured Information Technology employment situation. Provides the student the opportunity to utilize an industry experience for program credit. Each student completes a minimum of 72 hours working as an intern. Students are responsible for securing their own employment. Contact the IT internship instructor before enrolling.

### **10-107-114 Information Technology Internship 2 (2 cr.)**

Allows the student to learn under supervision in a structured Information Technology employment situation. Provides the student the opportunity to utilize an industry experience for program credit. Each student completes a minimum of 144 hours working as an intern. Students are responsible for securing their own employment. Contact the IT internship instructor before enrolling.

### **10-107-120 Windows Basics (1 cr.)**

Focuses on helping students to improve PC working skills and to understand the tasks an operating system performs. The current Windows Operating System is used to teach concepts and skills. Topics include Windows basics, navigation and file management skills, customizing the Windows working environment, using the Search function, and disk maintenance utilities.

### **10-107-137 Web Tools (2 cr.)**

Introduces various web tools to aid in the development process of web applications and web sites. Students will gain experience with version control, web analytics and other common tools used within everyday business operations.

### **10-107-150 Microcomputer Applications (2 cr.)**

Designed for students with little or no hands-on computer experience. Presents the basic functions of the Windows operating system and how to use the word processing, spreadsheet and presentation functions of Microsoft Office software. Students will integrate various functions of several Microsoft packages.

### **10-107-158 Systems Analysis (3 cr.)**

Introduces the principles and techniques of modern system analysis and design. It explores the fundamentals of traditional systems and methodologies, data flow diagrams and case tools. It also tracks the systems' development life cycle and explains the various stages.

### **10-107-184 IT Concepts (2 cr.)**

Provides students with a foundation in information technology and the use of information systems in today's business environment. Students explore fundamental computer concepts and terminology of the World Wide Web, e-mail, emerging technologies, hardware and software components and devices, programming languages, network basics, operating systems, and ethics.

### **10-107-186 IT Career Skills (3 cr.)**

Introduces students to the process and development of a plan for securing employment in the Information Technology field. Topics include job search strategies, resumes, cover letters, interviewing and networking. Students will learn business skills to maintain professionalism in many areas including customer service, technical writing, presentations, teamwork, quality and diversity.

### **10-107-187 IT Career Exploration (1 cr.)**

Acquaints students with career options and related job skills, salaries and employment trends in the information technology field. Familiarizes them with the IT program degrees offered at Fox Valley Technical College.

# Course Descriptions

## 109 Hotel & Restaurant Mgt

### 10-109-101 Risk Management & Crisis Planning (3 cr.)

Addresses security issues such as V.I.P. protection, kidnapping, hijacking, bombing and burglary. Included in crisis management issues are health, computer data loss, staff resignations, natural disasters, strikes, liquor liability and speaker cancellation/no show.

### 10-109-102 Transportation, Registration and Housing (2 cr.)

Identify the meeting audience location and understand technological abilities to best assess the location for a meeting and the type of registration to be used. Learn to identify and make informed decisions that allow attendees a seamless meeting experience.

### 10-109-103 Hospitality Law and Liability (3 cr.)

Introduces legal principles together with standard business law concepts and emphasizes their implications for the hospitality and tourism industry. Among the topics covered are contracts, torts and negligence, hotel/guest relationships, Americans with Disabilities Act, food service and employment laws, and consumer protection. Case studies involving the basic principles of law are used to assist in developing judgment in these areas.

### 10-109-104 Meeting & Event Management, Adv. Apps (3 cr.)

Learn to create, market, plan and implement incentive programs and special events. Apply creativity to develop events with unique purposes and presentations combining elements such as site selection, decor, lighting, sound and entertainment as well as food and beverage to reflect the theme of the event.

### 10-109-105 Hospitality Concept Development (2 cr.)

Introduces the learner to the basic process and consideration for a hospitality business concept start-up. Included in this study will be concept and menu development, equipment, facility layout, and design. In addition, this course will evaluate the business idea from a financial, operational, and practical view.

### 10-109-106 Risk Management for Hospitality (2 cr.)

Addresses security and crisis management issues encountered in the Meeting and Event Planning industry. Students will focus on understanding the impact of these issues while developing strategies and identifying resources to support appropriate resolutions.

### 10-109-107 Partnership Development (2 cr.)

Learn how to analyze a meeting to identify sponsorship and fundraising opportunities. These partnerships build support for a meeting, increase marketing effectiveness and increase meeting profitability.

### 10-109-108 Meetings Industry Budget & Financial Mgmt (3 cr.)

Establishing a realistic and sound budget is vital to creation of successful meetings. This course examines the steps in developing a meeting budget. Students learn techniques for projecting and managing budgets including per person methodology and break-even analysis. Emphasis is on situations oriented to the meeting industry.

### 10-109-111 Room Operations (3 cr.)

Introduces the functions of the housekeeping and front desk departments and their interdependency.

### 10-109-112 Exposition Management (2 cr.)

Provides the student with an understanding of the growing role of trade shows as a source of revenue for the sponsor as well as an opportunity for buyers and sellers to interact face-to-face in an educational environment. Students create a request for proposal, identify contractors necessary for producing the show, and learn how to effectively interact and communicate with exhibitors throughout the process.

### 10-109-113 Hospitality - Internship 1 (2 cr.)

Allows the student to investigate and learn through structured, hands-on experiences in the hospitality/tourism industry.

### 10-109-114 Hospitality - Internship 2 (2 cr.)

Provides the student an additional opportunity to investigate and learn through structured, hands-on experiences in the hospitality/tourism industry.

### 10-109-119 Hospitality Security (2 cr.)

Focuses on the need to provide a safe and secure environment for customers and employees. Areas of study include physical security, internal security, protection of funds, emergency management and guest room security.

### 10-109-125 Hospitality Sales and Promotion (2 cr.)

Covers sales and promotion in the hospitality industry. The emphasis is on promoting hospitality entities to attract new customers, selling principles and merchandising techniques for products and services, and innovative ways to maintain the interest of existing customers.

**10-109-126 Customer Service Management (3 cr.)**

Helps students to understand, apply and manage the principles of good customer service in a variety of hospitality environments. Particular attention will be given to the various roles and responsibilities of hospitality employees as they relate to customer service.

**10-109-127 Meeting Management Internship (3 cr.)**

Provides both theoretical and hands-on experience planning, setting up, and managing a meeting or event. Emphasis is on developing and implementing proper procedures to ensure professional results. Weekly seminars emphasize career-related topics.

**10-109-131 Tourism: A Community Approach (3 cr.)**

Focuses on the opportunities and advantages of approaching tourism from a community viewpoint. Students study the economic, employment and environmental impact of tourism on the quality of life experienced by a community.

**10-109-140 Principles of Group Sales (2 cr.)**

Provides a thorough understanding of the principles, practices and importance of group sales in the hospitality and tourism industry. Comparisons and contrasts will be examined between the functions of in-house marketing departments, convention and visitor's bureaus, chambers of commerce and municipality-based entities.

**10-109-150 Issues in Hospitality (2 cr.)**

Explores existing and emerging issues that affect the hospitality and tourism industries. The course culminates with the planning and hosting of an interactive seminar with businesses.

**10-109-152 Introduction to Hospitality (3 cr.)**

Introduces various aspects of the hospitality industry including lodging, food service, tourism and customer service. Students evaluate potential internship and career opportunities as they explore topics including professionalism, ethics & etiquette.

## 110 Paralegal

**10-110-101 Introduction to Paralegalism & Legal Ethics (3 cr.)**

Provides students with an introduction to the legal profession, court system, legal ethics, legal terminology, research, law office management concepts and procedures, and the role of paralegals.

**10-110-104 Legal Research (3 cr.)**

Focuses on the application of legal research techniques using traditional and computer-assisted resources and federal and state materials. One class period will be held at the UW Law Library in Madison, WI.

**10-110-105 Legal Writing (3 cr.)**

An advanced writing course that covers various internal and external legal documents.

**10-110-106 Family Law (3 cr.)**

Familiarizes the student with basic legal concepts involved in the area of family relations. Primary emphasis is in the field of divorce. Additional topics include children in need of protection and services, termination of parental rights, adoption, guardianship, and court procedures relating to family law.

**10-110-107 Legal Aspects/Business Organizations (3 cr.)**

Focus is on the formation, operations, and dissolution of types of business organizations, and substantive and procedural law involving business organizations.

**10-110-108 Legal Research and Writing (4 cr.)**

Focuses on the application of legal research and writing techniques using traditional and computer-assisted resources and federal and state materials. Incorporates writing skills that cover various internal and external legal documents. One class period will be held at the UW Law Library in Madison, WI.

**10-110-109 Paralegal Technical Skills (2 cr.)**

Provides paralegal students with the fundamentals of law office organization and technology. Topics include organization and utilization of support personnel, time and billing systems, budgets, case and file management, calendaring and docket control, and accounting systems in a law office. Students will demonstrate knowledge of these topics from an ethical perspective.

**10-110-110 Real Estate Law (3 cr.)**

Focus is on the law of real property, forms of ownership, land description methods, public and private encumbrances, real estate contracts, deeds, financing sources, title evidence, and the closing process.

**10-110-111 Insurance Law for Paralegals (3 cr.)**

Study of laws and states regulation of insurance. Topics include the insurance contract, the role of insurance agents, insurable interest, insurer's defenses, forfeiture and exclusion of risk, election and waiver, no-fault statutes, and the various types of insurance.

# Course Descriptions

## **10-110-114 Administration of Estates (3 cr.)**

An in-depth course dealing with wills, trusts, estates, and probate. Identifies techniques for fact gathering, income and death tax principles, use of trusts, probate, and administration of terms of wills.

## **10-110-142 Paralegal Internship (3 cr.)**

Provides attorney-supervised work experience in a legal environment. Each student completes a minimum of 144 hours working as an intern. Course is designed for the student to take during the final semester of the program.

## **10-110-151 Civil Litigation Procedures (3 cr.)**

Provides students with outlines of the stages of civil litigation including initial client contact, investigation, pleadings, and motions. Covers the civil litigation procedure during discovery, trial, and appeal.

## **10-110-153 Bankruptcy Law (3 cr.)**

Provides students with an introduction to bankruptcy law with emphasis on the paralegal's role. Topics include individual and business liquidation and reorganization, debtor's and creditor's rights, litigation proceedings in bankruptcy court, legal concepts and terminology relating to bankruptcy law, ethical considerations for paralegals working in this area, and current computer applications utilized in bankruptcy practice.

## **10-110-154 Law Office Management and Technology (3 cr.)**

Provides paralegal students with the fundamentals of law office management, organization and technology. Topics include the organization and utilization of support personnel, time and billing systems, budgets, case and file management, calendaring and docket control, and accounting systems in a law office. Students will also develop technology skills using various law office computer applications including client and document management, electronic discovery and presentation technology. Students will demonstrate knowledge of these topics from an ethical perspective.

## **10-110-160 Employment Law for Paralegals (3 cr.)**

Provides students with an understanding of the analysis of federal and state laws governing employment relationships, job discrimination, sexual harassment, workplace privacy, labor standards, and human resource management.

## **10-110-168 Paralegal Criminal Procedures (3 cr.)**

Focus is on substantive and procedural criminal law, the role of paralegals in both the prosecution and defense of criminal actions, with emphasis on investigations and preparation of legal documents.

## **114 Finance**

### **10-114-104 Financial Institutions (3 cr.)**

Examines a balanced view of the United States financial system. Includes an understanding of all financial institutions, financial markets and financial instruments. Introduces the operation, mechanics and structure of the financial system.

### **10-114-113 Financial Products and Services, Principles (3 cr.)**

Covers financial institutions that offer a broad spectrum of products and services to government, businesses and individuals. It examines current financial products and services and gives insight into developing and promoting new products and services to meet customer needs.

### **10-114-115 Credit Procedures (3 cr.)**

Covers consumer and commercial credit management. It focuses on what the seller must know and do when using credit selling to produce maximum sales with minimum losses. Topics include types of credit, investigation and evaluation of risk, sources of information, decision making, and collection policies and practices.

### **10-114-121 Analyzing Financial Statements (2 cr.)**

Examines the basic skills of financial analysis to the prospective lender credit analyst.

### **10-114-124 Money and Banking, Introduction to (3 cr.)**

Provides a study of money and its creation, monetary systems, the operation of the Federal Reserve System, commercial banking systems and international monetary problems. It also examines the factors that determine the value of money and the operation of the banking system in relation to price level, employment, savings and investment, and economic activity.

### **10-114-175 Financial Planning (3 cr.)**

Approaches planning from the perspective of an individual who applies specific financial concepts and principles to setting financial goals, choosing a career, budgeting and cash flow management. Topics include credit, income taxes, asset protection, investments, retirement and estate planning.

### **10-114-176 Stock and Bond Investments (3 cr.)**

Provides an overview of the problems of investing; the stock, bond and mutual fund investment vehicles available; and the markets in which investments are traded.

**10-114-182 Finance Internship (3 cr.)**

Prepares the learner for the finance internship experience. Students develop resumes and interview skills appropriate for positions specific to their industry. Requires 144 hours of practical work experience in an area directly related to their career. Internship work is supervised and evaluated.

**116 Human Resources****10-116-104 Labor Relations (3 cr.)**

Focuses on labor organizations and relationships with management, government agencies and other organizations. Covers contract negotiations, the grievance process, arbitration preparation and labor laws.

**10-116-105 Employee and Labor Relations (3 cr.)**

Explores employee relations efforts in both unionized and non-union organizations.

**10-116-123 Human Resources Internship (2 cr.)**

Provides on-the-job supervised Human Resources work experience in various businesses. Weekly in-school seminars emphasize career-related topics. Each student completes a minimum of 72 hours working as an intern. Completion of a minimum of 34 program credits is highly recommended.

**10-116-150 Employment Law (3 cr.)**

Introduces employment and labor law. This course emphasizes human resource management and labor relations. It explores employment and labor and social issues in the work environment through the laws that govern the employer/union and employer/employee relationships.

**10-116-152 Technology in Human Resources (2 cr.)**

Examines current technology available to create efficiencies in human resource processes such as recruiting, record keeping, performance management and training. Students will explore an HRIS software program.

**10-116-153 Compensation and Benefits (3 cr.)**

Focuses on the compensation and benefit elements that comprise total compensation. This course covers base pay, merit pay and variable pay programs and examines such benefits as government regulation, group welfare plans, pension plans and flexible benefit plans.

**10-116-154 Recruiting and Hiring (3 cr.)**

Focuses on recruitment, selection and hiring practices. This course examines what today's workforce expects and how to efficiently use the recruitment budget. All steps of the hiring process are reviewed. This material supplements the legal aspects of the employment process.

**10-116-155 Business Ethics (3 cr.)**

Explores ethical considerations and sustainability issues across business areas such as human resources, accounting and marketing. Examines the differences between legal and ethical decision making.

**10-116-160 Training Design and Measurement (3 cr.)**

Explains the fundamentals of training and development coordination. It includes terminology, levels of learning, matching training providers with organization needs, organizing materials and environments to maximize learning, measuring completion of objectives, and communication with employees.

**10-116-168 Principles of Budgeting for HR (3 cr.)**

Explore and assess the financial information required to analyze and interpret financial documents pertinent to the Human Resource field. While an emphasis is placed on budgeting and the budgeting process, it is not intended to be an in-depth study of the accounting field.

**10-116-193 Human Resources Management (3 cr.)**

Covers the supervisor's role in human resources planning. Topics include human resource development, employee selection, performance appraisals, compensation, training, labor relations, organizational productivity, motivation, teamwork and affirmative action.

# Course Descriptions

## 138 International Trade

### **10-138-140 Managing Cross-Cultural Relationships (1 cr.)**

Gain an understanding and appreciation of culture, in order to improve cross-cultural interpersonal interactions and communications. Explore the traditions, lifestyles and practices of other countries. Learn about the many components of culture, discuss several specific cultural profiles and develop skills to build successful professional and business relationships.

### **10-138-150 Global Business Fundamentals (3 cr.)**

Provides the opportunity to develop the knowledge, skills and understanding of global business foundations, global business environments, organizing and managing global business, marketing in a global economy and global financial management.

### **10-138-151 Global Business Professional Capstone (1 cr.)**

Review the key content and insights of the Global Business Professional seminars. Discuss practical applications. Share strategies for how to prepare for and participate in the NASBITE CGBP exam. A practice exam will be taken and discussed or participation in final capstone project.

### **10-138-152 Global Sales, Marketing & Product Promotion (1 cr.)**

Learn about international consumer expectations and cultural requirements. Create a marketing plan; including market research, local tailoring, and product liability implications. Review legal and regulatory requirements related to global activities.

### **10-138-153 Global Operations Management (1 cr.)**

Learn global business planning techniques including vision and mission statements, legal and government compliance issues. Gain a practical understanding of strategic and operational functions, including global human resources options.

### **10-138-166 Global Supply Chain & Logistics Management (1 cr.)**

Explore strategies and gain insight into building a solid international supply chain. Learn factors that affect transportation modes; product classification, trade agreements, safety issues and key information regarding regulatory requirements.

### **10-138-181 Global Trade, Finance & Banking (1 cr.)**

Learn about foreign exchanges and banking practices. Understand the impact of a customer's compliance, logistics and documentation. Learn about the process and management of import, export and letters of credit.

## 140 Global Education

### **10-140-100 International Professional Field Studies (3 cr.)**

Provides students with an opportunity to study/work in their program area in a foreign country. They learn the fundamentals of the language spoken in the country they are visiting as well as gain an understanding of the values and behaviors of a different society and workplace.

### **10-140-100K International Prof Field Study: Ireland (3 cr.)**

Provide students with firsthand knowledge of living, working and studying in an international environment. Participants will learn basics of a language and culture, interact with local students and professionals, and gain cultural awareness and understanding of values, beliefs and behaviors in a different society and workplace.

### **10-140-127 Spanish Immersion-Study Abroad (3 cr.)**

Travel to another country on a two-week language and culture immersion program. Classes are small, taught by native Spanish speakers and offered at all levels from beginners to advanced, with an option to take career-specific language courses. Students are immersed in the culture and live with carefully selected host families.

## 141 Global Studies

### **10-141-100 Spanish 1 Culinary Arts (3 cr.)**

An introduction to the Spanish language focusing on terminology as it pertains to communicating culinary and restaurant tasks. Upon completion of this course, the participant will have the basic ability to understand spoken Spanish, deliver basic job related commands, explain simple culinary/restaurant procedures, and gain insight into culture as it relates to interacting with Spanish speakers.

### **10-141-110 Spanish 1 Health Care (3 cr.)**

Students learn basic phrases and questions necessary for health care tasks. Upon completion, the participant will have the basic ability to understand spoken Spanish, gain insight into cross-cultural issues as well as to express and obtain explanations of common symptoms, the nature and the duration of an illness and obtain patient vitals.

### **10-141-111 Spanish 2 Health Care (3 cr.)**

Presents more complex phrases, questions and in-depth vocabulary for health-related tasks. At the conclusion of this course, the participant will have the ability to understand more complex spoken Spanish, gain further insight into cross-cultural issues as well as to obtain information about more complex health symptoms and illnesses. Spanish 1 Health Care (10-141-110) or consent of instructor is required.

**10-141-112 Spanish 3 Health Care (3 cr.)**

A continuation of Spanish 2 Health Care (10-141-111) presents increasingly complex phrases, grammar and in-depth vocabulary for health-related tasks. Students will understand and express complex spoken Spanish as it relates to health care, gain awareness of cross-cultural issues as well as obtain information about more specific health-related symptoms and illnesses. Spanish 2 Health Care (10-141-111) or consent of instructor is required.

**10-141-113 Spanish 4 Health Care (3 cr.)**

A continuation of Spanish 3 Health Care (10-141-112) presents increasingly complex phrases, grammar and vocabulary. Students will understand and express more complex health-related Spanish including identifying more symptoms and illnesses and further study of cross-cultural topics. A capstone course which focuses on practice and application of concepts learned in Spanish Health Care 1-3. Spanish 3 Health Care (10-141-112) or consent of instructor is required.

**10-141-115 Spanish 1 Law Enforcement (3 cr.)**

Students learn basic phrases and questions to carry out law enforcement protocols. The participant will have the basic ability to understand spoken Spanish, obtain basic job related information, identify individuals, time and date of incidents, obtain descriptions, and express commands.

**10-141-158 Global Understanding (3 cr.)**

Develop global perspectives while acquiring skills to effectively work in global environments. Learners compare and contrast patterns of work related practices. Topics include the impact of geography, history, religion, and politics in shaping behaviors and social interactions like; non-verbal communication, negotiating, conflict management, team work, decision making and motivation.

**10-141-164 Global Leadership & Professional Development (3 cr.)**

This course emphasizes global leadership and professional development, focusing on academics, professionalism, and personal growth. Students will learn about key global leadership principles and how to apply the principles to their personal, professional, and academic life. The course provides training for future “agents of change” professionals with global awareness.

**10-141-165 International Relationship Development (3 cr.)**

Designed to advance knowledge and understanding of other cultures. Students explore similarities and differences between another culture and their own while practicing cross-cultural communication skills through interacting extensively with an individual from another country. Students will incorporate global perspectives in their professional interactions as they complete tasks and problem solve. Pre-Req: Working Effectively Across Cultures (10-141-166)

**10-141-166 Working Effectively Across Cultures (3 cr.)**

This course is designed to address the needs of today’s increasing global business environment by exploring the impact of culture on work behavior, evaluating workplace cultural scenarios, and building a practical set of tools to effectively interact across cultures, in order to excel in today’s business environment.

**10-141-167 Global Independent Study (3 cr.)**

Focuses on a country/region of the world of special interest, and provides the student with the chance to gain occupational experience through observation and in-depth study. Objectives are mutually developed by the student and the instructor. Course Instructor consent required. Pre-req: Working Effectively Across Cultures (10-141-166)

## 145 Small Business

**10-145-100 Entrepreneurial Venture-Your Business Plan (3 cr.)**

Focuses on the business planning process of business concept development through financial projections and planning. This is a blended-learning course designed to teach students how to research, develop and write detailed start-up business plans which can be used to create successful businesses. The blended-learning environment combines the flexibility of Internet-based e-learning with the benefits of face-to-face instruction.

**10-145-102 Entrepreneur E-Business Plan (3 cr.)**

Designed to help entrepreneurs master the skills needed to succeed in executing an online business. Examines three commonly employed e-business models: online storefront (e-store), online auctions and advertising-based businesses.

# Course Descriptions

## **10-145-104 Entrepreneurship, Introduction to (3 cr.)**

Provides students with opportunities to investigate, understand and apply the process of choosing entrepreneurship as a career path. Explores the entrepreneurial experience by focusing on an awareness of entrepreneurship, opportunity recognition, business concept development and preliminary feasibility testing. Students gain the knowledge, skills, concepts and strategies relevant for start-up and early-stage entrepreneurs. The practical hands-on approach encourages students to immerse themselves in the entrepreneurial experience.

## **10-145-105 Entrepreneurship: Managing Your New Venture (3 cr.)**

Introduces how to manage an entrepreneurial venture through the three developmental stages of growth, expansion and maturity.

## **10-145-107 Building Your Business Model (2 cr.)**

Evaluating and modeling potential new business ventures is the focus of this course. Students will explore and map how a business intends to make money through the four main areas of a business: customers, offer, infrastructure, and financial viability. Through a hands-on, experiential approach students gain a better understanding of how to transform a start-up into a repeatable and scalable business venture.

## **10-145-108 Business Start-up & Launch Experience (3 cr.)**

Create and launch a business start-up as a capstone to your entrepreneurship studies. In the Business Start-up & Launch Experience course the student will work one-on-one with the Instructor and a local business mentor to finalize their business model and open a revenue producing venture. This course is an alternate to the Business Management Internship course.

## **10-145-115 Entrepreneurial Thinking (3 cr.)**

Engages participants in fundamental aspects of an entrepreneurial mindset as an essential life skill. Course draws upon concepts of entrepreneurial thought/process, and features real-world "unlikely" entrepreneurs who overcame challenges by embracing an entrepreneurial mindset. Experiential learning is obtained through identifying "problems", finding solutions, and making connections beyond the classroom.

## **10-145-116 Financial Intelligence for Entrepreneurs (3 cr.)**

Targets prospective and existing entrepreneurs who are not financial managers. Its objective is to help entrepreneurs understand the fundamentals of financial management and analysis that will enable them to better manage the financial resources of their business.

## **10-145-120 E-seed Entrepreneurship Training (2 cr.)**

Learn to launch your own business with E-seed. Understand the finer art of entrepreneurial and small business management to successfully launch and grow your own business. Design a business model that works, write a business plan to manage and guide the business and attract the financing you need.

## **10-145-181 Entrepreneurial Venture Financing (2 cr.)**

Deals with developing a financial management system for a small business, calculating financial reports, and acquiring an appreciation for the importance of accurate report and recording keeping. Identifies potential financial and technical support resources.

## **150 IT - Network Communications**

### **10-150-105 Virtualization Technologies (3 cr.)**

Introduces virtualization technologies including VMware, Citrix and Microsoft Hyper-V. Hands-on lab activities will be used to install and configure each virtualized environment.

### **10-150-107 System Administration (3 cr.)**

Covers advanced theories and practices including the designing, maintaining, and supporting an environment using Active Directory, Group Policy, File Security, DHCP, and DNS. A final capstone project allows the students to create their own personalized environment based on a set of user and business requirements.

### **10-150-115 Network Cabling (2 cr.)**

Examines structured premises cabling systems, industry standards, media characteristics, connectors, transmission, electrical concepts, safety, pulling and terminating cable, and testing cable.

### **10-150-116 Network Infrastructure 1 (3 cr.)**

Covers networking topics including the OSI model, local area and wide area networking. Also focuses on assigning network addresses and configuring network devices including Cisco routers and switches. Includes considerable hands-on learning activities and helps prepare learner for the Cisco CCNA exam.

### **10-150-122 Network Infrastructure 2 (3 cr.)**

Covers advanced networking topics including how routing tables are created, configuring static routes, implementing a classless IP addressing scheme, and configuring RIPV1, RIPV2, single area OSPF, and EIGRP operations in a small routed network. Includes considerable hands-on learning activities and helps prepare learner for the Cisco CCNA exam.



**10-150-127 IT Project Management (2 cr.)**

Examines the organization, planning and controlling of projects; also provides practical knowledge on managing project scope, schedule and resources. Topics include project life cycle, work breakdown structure and Gantt charts, network diagrams, scheduling techniques and resource allocation decisions. Concepts are applied through team projects and tutorials using project management software.

**10-150-129 Scripting Using Perl (3 cr.)**

Introduces non-programming students to scripting. During this course students will develop the scripting skills necessary for solving common business problems. Structured programming and modular design techniques are emphasized. Students will be required to complete simple to complex scripting assignments.

**10-150-141 Operating Systems Security (2 cr.)**

Covers the basics of securing Microsoft Windows workstations and servers. Students start by identifying the risks and vulnerabilities associated with Windows and then utilize a variety of tools and techniques to decrease risks arising from these vulnerabilities. Includes considerable hands-on learning activities implementing operating system hardening, application security and incident management.

**10-150-144 Ethical Hacking (3 cr.)**

Introduces the techniques hackers use to discover vulnerabilities. Students will learn ways to tighten the network security to protect the exposed data from the discovered vulnerabilities. Focus is on penetration-testing tools and techniques that security testers and ethical hackers use to protect computer networks.

**10-150-145 IP (Internet Protocol) Telephony (2 cr.)**

Presents the orientation and foundation for installing, configuring and maintaining IP (Internet Protocol) telephony solutions. Hands-on labs using Avaya and Cisco equipment help the learner work through real world voice, video and data applications to enhance personal and professional confidence with IP telephony networks.

**10-150-146 Wireless Networking (2 cr.)**

Covers how wireless devices connect to networks, wireless device configurations, standards and security. Wireless networking is one of the fastest growing areas of technology available today. Considerable hands-on learning is included.

**10-150-147 Linux, Introduction to (2 cr.)**

Covers introductory Linux topics including operating system basics, system installation, file system management, file system administration and basic commands. Considerable hands-on learning is included.

**10-150-148 Linux Administration (3 cr.)**

Covers advanced Linux topics including scripting in the BASH shell, system initialization, working with X Windows, managing Linux processes, system administration tasks, system backup, software installation, troubleshooting, system performance, network configuration and security. Considerable hands-on learning is included.

**10-150-149 Windows PowerShell Scripting (3 cr.)**

Teaches everything you need to know to begin developing your own Windows PowerShell scripts. This involves learning how to interact with the Windows PowerShell command line, learning about Microsoft's .NET framework and how to work with other Windows technologies, such as the Windows registry, as you learn how to become a PowerShell programmer.

**10-150-150 E-mail Administration (2 cr.)**

Focuses on the implementation and administration of e-mail servers in both a Windows and a Linux environment. Topics include creating user mailboxes, SMTP mail, backup and recovery, and other administration tasks. Also covers virus protection and security of e-mail servers and includes considerable hands-on learning activities.

**10-150-156 Windows Server (3 cr.)**

Covers Microsoft Windows Server 2012 R2 administration including server hardware and software, Active Directory, file resources, printers, disk resources, Web resources, DNS and DHCP. Monitoring and troubleshooting server resources are also examined. Extensive hands-on activities are included.

**10-150-159 Server Applications (3 cr.)**

Covers advanced theories and practices including designing, maintaining, and supporting an environment using Active Directory, Group Policy, File Security, End-point management, SharePoint, Mobile Device Management (MDM), Certificate Services, and Microsoft Exchange.

Extensive hands-on activities are included demonstrating standalone technologies and integration of applications within an environment.

# Course Descriptions

## **10-150-160 Network Security (3 cr.)**

Introduces students to intrusion detection tools, network security design, various types of network firewalls, and the basics of VPN configuration. A solid understanding of LAN/WAN fundamentals is required for this course.

## **10-150-161 Information Assurance (2 cr.)**

Examines the basics of information security, including access control and organizational security policies. This course will include the process of securing user workstations, laptops and mobile devices.

## **10-150-162 Network Essentials (2 cr.)**

Provides an introduction to networking theory and technologies, including the basics of communication, common protocols, the OSI model, network topologies, local network media, network devices, network security and networking tools. Includes more in-depth study of the components of TCP/IP, Ethernet, and wireless networks. Involves considerable time developing troubleshooting skills.

## **10-150-163 Network Specialist Capstone (2 cr.)**

Provides students in this final-semester course the ability to integrate and apply the skills learned throughout their study in the Network Specialist Degree program to build and manage a network environment based on real-world scenarios. Emphasis will be placed on hands-on problem identification and solution implementation.

## **10-150-164 System Administration Practicum (2 cr.)**

This practicum allows students to demonstrate their System Administration proficiencies by creating a personalized environment based on a set of user and business requirements.

## **10-150-166 Incident Response (3 cr.)**

A capstone course in which students respond and manage the aftermath of a security breach. This class will simulate a real-world security attack. Students will identify the event and handle the situation in a way that will limit damages, reduce recovery time and manage the overall cost of the event.

## **10-150-167 Risk Assessment (3 cr.)**

Students will learn the practical skills necessary to perform regular risk assessments for their organizations. Every organization needs to make priority decisions on how best to defend their valuable data assets. Risk management should be the foundational tool used to facilitate thoughtful and purposeful defense strategies. Students will implement standards-based, proven methodologies for assessing and managing risk and select and implement security controls that ensure compliance with applicable laws, regulations, policies, and directives.

## **10-150-168 Security Monitoring and Operations (3 cr.)**

Examine the systems put in place to analyze threats and detect anomalies that could indicate a security incident. The challenge companies face is timely detection when they are victimized by an attack. Students will become familiar with policies, procedures, and continuous monitoring programs that can be utilized to protect an organization.

## **152 IT - Application Development**

### **10-152-105 Web Graphics, Introduction to (3 cr.)**

Introduces the fundamental concepts necessary to generate and prepare graphics for Web pages. The course will focus on raster as well as vector images. Areas addressed will be color selection, layout, text, optimizing images, creating backgrounds, slicing, creating navigation, transparent graphics and animated graphics. Adobe software will be utilized.

### **10-152-106 Cascading Style Sheets (CSS) (3 cr.)**

Learn about responsive CSS. The course will cover CSS structure, current properties and concepts to create responsive web layouts that will meet web accessible standards and work on multiple devices. In addition you will learn to apply CSS properties, and their values, to enhance the visual appearance of your web site.

### **10-152-108 Advanced Software Development (3 cr.)**

Explores advanced programming techniques using the Microsoft.NET environment. Focuses on using Object Oriented Programming (OOP), advanced controls, data reporting tools, deployment methods and database access methods. Project design and management methodologies will be developed throughout the class.

### **10-152-110 Java Applications Programming (3 cr.)**

Java is one of the most used programming languages in the software industry. Programs written in Java run on any operating system. In this course, students learn the Java syntax, Object Oriented Programming, software design skills and algorithm development.

**10-152-111 C# Introduction to Programming (3 cr.)**

Introduces students with little or no programming background to programming and logic principles that apply to traditional and Windows systems. Uses C# to apply the principles by developing simple Windows applications.

**10-152-114 Computer Programming C++ (3 cr.)**

Introduces C++ programming concepts and statements including input and output of data in a console application, variables and data type considerations, if-else and switch-case programming constructs, looping constructs, creating programmer defined functions, arrays, pointers, string manipulation, data structures and sequential file processing. It also introduces Object Oriented Programming in the C++ language.

**10-152-116 C# Intermediate Programming (3 cr.)**

Covers C# programming concepts and statements starting with basic class/object terminology. Investigates data types, methods and behaviors, iteration, arrays, lists and collections, Windows (GUI) programming, event programming, inheritance, file IO, exception handling and Database access methods.

**10-152-117 JavaScript (3 cr.)**

Teaches basic concepts of programming using JavaScript and XHTML languages. Focuses on embedding JavaScript in HTML, program control logic and introduces object-oriented programming.

**10-152-120 HTML (2 cr.)**

Presents the foundation skills necessary to create Web pages using HyperText Markup Language (HTML). Covers design concepts, hypertext links, tables, frames and Cascading Style Sheets (CSS).

**10-152-121 PHP (3 cr.)**

Introduces concepts in developing dynamic, server-side Web applications that accept input from forms, process the data on the Web Server to maintain a database. Two approaches are covered: open source language PHP and Microsoft's ASP.Net framework. Concepts of HTML extended to learn techniques to develop a robust, interactive website.

**10-152-125 ASP.Net (3 cr.)**

Gives students a first look at the ASP.Net architecture to create and maintain a dynamic Web site. Microsoft's Visual Studio will be used to design, code and test multi-page Web applications that use a database and manage state. Master pages and themes, grid controls and 3-tier applications are covered.

**10-152-126 Agile Development (3 cr.)**

A capstone course in which students utilize multiple Web technologies to build a complete and functional Web site in a group setting to simulate real-world development. Project design and management methodologies will also be introduced to expose students to estimating and project management techniques.

**10-152-131 WordPress (3 cr.)**

Introduces the basics of WordPress. Students will learn how to create blog sites, publish posts and pages, work with themes, employ widgets, create custom menus, activate plugins, and utilize page templates. Students will work to build a custom WordPress theme from scratch and learn how to make WordPress more secure. The course will use HTML, CSS, Dreamweaver, and the current version of WordPress. Students are required to acquire server space to host their work.

**10-152-132 Mobile Web (3 cr.)**

Develop responsive, mobile first web pages using HTML, CSS, jQuery and the open-source framework, Bootstrap.

**10-152-133 JavaScript/jQuery (3 cr.)**

Teaches JavaScript using the jQuery library to manipulate web page content and add animation and interactivity. Topics include, object, arrays, functions, events, API's, jQuery UI, AJAX and JSON. Prior knowledge of programming logic required.

**10-152-154 COBOL (3 cr.)**

Focuses on writing programs in the COBOL language using structured programming techniques. It also covers how to avoid and correct programming errors and introduces report design and control break processing.

**10-152-155 Database Concepts (2 cr.)**

Uses hands-on exercises and projects to give students experience with using databases for data storage and retrieval. To encourage students to become more sophisticated database users, background information and general relational database concepts are included.

**10-152-163 Database Design (3 cr.)**

Expands on the concepts of the Database Fundamentals course. Reviews design techniques and normalization concepts related to creating a database. Introduces the concepts of security planning, performance tuning, analysis, and deployment and maintenance duties.

# Course Descriptions

## **10-152-165 Oracle Database Administration (3 cr.)**

Provides comprehensive training for developing and supporting relational database applications using Oracle database and application development utilities. It also covers maintenance and management of the Oracle environment.

## **10-152-166 Python Programming (3 cr.)**

Introduces students to programming using the powerful, yet easy to learn, Python language. Python is the language behind many mission-critical applications including Google. Students will write applications using Python.

## **10-152-168 Data Access for Programmers (3 cr.)**

Provides background in fundamental database concepts, design, documentation, implementation and distribution involving the relational database model. Students will create, query and update relational databases using Structured Query Language (SQL).

## **10-152-169 Advanced Database Design (3 cr.)**

Expands on the concepts of the Database Fundamentals course. Reviews design techniques and normalization concepts related to creating a database. Introduces the concepts of security planning, performance tuning, analysis, and deployment and maintenance duties.

## **10-152-170 Data Administration Techniques (3 cr.)**

Covers the operation and management of client/server back-end relational databases. Topics include data definition language, table modification, creating views, indices, triggers, transactions, backup and recovery.

## **10-152-180 Introduction to Mobile Development (3 cr.)**

Introduces students to the different stages of development for mobile applications. We will cover the different language options and the process of getting an application to be available in a world market. This class will also cover development strategies for iPhone, iPad, Android and the Windows Phone.

## **10-152-181 iOS Programming (3 cr.)**

Provides students with an in-depth overview of how to set up for iOS development while gaining an understanding of the iOS platform and the tools available in that environment including Objective C.

## **10-152-182 Android Programming (3 cr.)**

Introduces students to designing and building mobile applications using the Android™ open-source platform using Java and Eclipse. This course provides students an in-depth overview of how to set up for Android™ development while providing an understanding of Android™, its services and how it fits into the overall Linux run time.

## **10-152-183 WinPhone Programming (3 cr.)**

Provides hands-on training for designing and building mobile applications using Microsoft Visual Studio, Microsoft C# and Silverlight for the Windows Phone. Provides students an in-depth overview of how to set up for WinPhone development while providing for an understanding of WinPhone, its services and how it works with the .Net framework.

## **154 IT - Computer Support**

### **10-154-101 Emerging Technologies and Trends (3 cr.)**

Explores the acquisition and support roles of PC peripheral technologies. Learn to use different learning methodologies to develop and present a Portfolio of Assessment. Through lectures, demonstrations and hands-on applications, students examine file formats, digital imaging (cameras, scanners and video), printer technologies, PDAs, storage devices, sound technologies and displays.

### **10-154-102 IT Customer Service Skills (2 cr.)**

Covers the interpersonal, communication and problem-solving skills required in technical support positions. Exercises provide interaction with other learners in a team. Students explore the information and technical tools needed to function effectively in a support position. Students will be expected to schedule an additional hour each week in the on-campus Student Help Desk, developing skills working with customers in a help desk setting.

### **10-154-103 Help Desk Concepts (4 cr.)**

Introduces techniques used to install software, document software installations and how to train end-users. Explains basic concepts and implementation of a training plan. Also presents an overview of help desk operations. Students gain a better understanding of how people, processes, technology and information affect the typical help desk. Students will be expected to schedule an additional hour each week in the on-campus Student Help Desk, developing skills working with customers in a help desk setting.

## **10-154-105 Advanced Desktop Management (2 cr.)**

Provides students with the background needed to build the knowledge and skills to support end-users and computers running the Microsoft suite of productivity applications. The course is directed at the skills needed to work in a variety of environments, including corporate environments as well as support for home users via phone support, remote support and retail counter support.

## **10-154-106 Desktop Repair and Maintenance (2 cr.)**

Covers configuring, maintaining, upgrading and repairing Intel-based computers and exploring functions and interrelations between components. The course examines system configuration, component care, system improvement, troubleshooting and failure identification. Advanced PC operating system concepts are also covered.

## **10-154-107 Desktop Management (2 cr.)**

Introduces students to the skills needed to support client PC Operating Systems. Through significant hands-on activities, learn how to configure, secure, utilize and troubleshoot client operating systems.

## **10-154-108 IT Service Desk Practicum (2 cr.)**

Demonstrate the knowledge and skills necessary to work in an IT Service Desk, including managing information technology hardware, software, creating business solutions, supporting computer networks, providing end user support and solving information technology problems all while demonstrating a high level of professionalism.

## **10-154-109 IT Service Desk Concepts (3 cr.)**

Introduces how people, processes, technology, and information affect an IT Service Desk. Students are introduced to industry standard ITIL terminology and practices and develop skills working with customers in a Service Desk setting. Explains basic concepts and implementation of a training plan and how to train end-users.

## **160 Business Health Services**

### **10-160-100 Intro to Medical Administrative Careers (1 cr.)**

Introduces various aspects of medical administrative careers. Explores a variety of topics including career expectations, future employment opportunities and current employment trends.

### **10-160-102 Medical Office Procedures (3 cr.)**

Emphasizes the principles of medical office procedures. Students will gain experience in understanding medical law and ethics, utilizing effective oral and written communication, and managing medical office procedures including appointment scheduling, patient reception and registration, medical records, medical billing, health insurance, business operations, human resource functions, and financial management. Students will also gain knowledge in locating and obtaining a position in a medical office.

### **10-160-106 Business Health Simulation (3 cr.)**

Provides simulated on-the-job training that allows students to apply the theories, skills and techniques studied in the Medical Office Assistant program. Students work a minimum of 144 hours in a simulated business health environment. The simulation includes weekly discussions related to job search and career planning.

### **10-160-107 Professionalism for Medical Admin. Professionals (2 cr.)**

Develops professional traits and behaviors related to the Business Health Services industry. Students will focus on business etiquette, ethics, diversity, customer service, problem solving, and communication

### **10-160-108 Health Insurance Principles (3 cr.)**

Provides an overview of health insurance terminology. Students gain knowledge of various insurance programs including private health insurance, dental insurance, Workers' Compensation, disability insurance, hospital insurance and government plans.

### **10-160-109 Business Health Documentation (3 cr.)**

Provides introduction to business health documentation practices. Students will develop skills in the areas of medical and English language, proofreading, editing and research.

### **10-160-112 Business Health Billing Applications (3 cr.)**

Provides an overview of billing and collection processes within the Business Health Services industry. Students will gain skill in understanding forms, billings, collections and insurance.

# Course Descriptions

## 170 Broadcast Captioning

### 10-170-101 Captioning/CART I (4 cr.)

Learn to write dictation at 160 wpm; broadcast 10 minutes non-stop; write new punctuation and symbols, new flagged alphabet characters, environmental sounds, web/Internet addresses, common proper names, common female and male first names, governmental/political terms, terms applicable to food, the names of animals, finger-spell words, increase vocabulary, use terms applicable to criminology, and manage dictionaries.

### 10-170-105 Realtime Reporting 2 (5 cr.)

Prepares the learner to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffixes; numbers, frequently used words and phrases, contractions using the Z-rule, the "Flagged Alphabet", apply realtime conflict elimination principles, apply realtime theory and write dictation using a realtime theory at a minimum speed of 110 wpm. Concurrent enrollment in Realtime Reporting 2 Lab is required.

### 10-170-106 Realtime Reporting 1 (5 cr.)

Prepares the learners to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms and phrases, words in their singular and plural forms, and prefixes and suffixes. Concurrent enrollment in Realtime Reporting Lab 1 is required.

### 10-170-108 Realtime Reporting Speed Development (2 cr.)

Further develops skills acquired in Realtime Reporting 2 on literary, jury charge, and testimony material beginning at 120 wpm. Students must pass two, 3-minute timings at a minimum speed of 110 words per minute. Prerequisite: Realtime Reporting 2

### 10-170-109 Literary 1 Advanced (2 cr.)

Prepares the learner to write literary material at 150 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy, write and read back current events dictation, and prepare salable transcripts. Prerequisite: Literary 1 Beginner; Concurrent enrollment in Literary 1 Lab Advanced is required.

### 10-170-111 Literary 2 Advanced (2 cr.)

Prepares the learner to write literary material at 180 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy, write and read back current events dictation, and prepare salable transcripts. Prerequisite: Literary 2 Beginner; Concurrent enrollment in Literary 2 Lab - Advanced is required.

### 10-170-128 Jury Charge 1 Advanced (2 cr.)

Prepares the student to write jury charge material at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Prerequisite: Jury Charge 1 - Beginner; Concurrent enrollment in Jury Charge 1 Lab - Advanced is required.

### 10-170-129 Jury Charge 2 Advanced (2 cr.)

Prepares the learner to write jury charge material at 200 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Prerequisite: Jury Charge 2 - Beginner; Concurrent enrollment in Jury Charge 2 Lab - Advanced is required.

### 10-170-141 Court Reporting Procedures (2 cr.)

Introduces the student to reporting procedures for which reporters are responsible in the courtroom, deposition, and real-time reporting environments including preparing salable transcripts, researching legal citations, and developing professional development plans.

### 10-170-143 Internship in Broadcast Captioning/CART (1 cr.)

Learn to caption live broadcast, use television broadcast terminology, describe television broadcast operations, and provide CART services to a hearing-impaired person. Students must be writing at 180 words per minute literary prior to enrolling in this course.

### 10-170-144 Realtime Reporting Orientation (1 cr.)

Prepares the student to use computer-assisted, real-time transcription software, Windows, e-mail, a steno machine, and a laptop in writing machine shorthand in court reporting and to complete and submit required coursework.

### 10-170-145 Court Reporting Internship (1 cr.)

Prepares the student to write machine shorthand verbatim for a minimum of 40 hours of actual writing time in the courtroom, classroom, and deposition environment under the supervision of a working reporter; prepare a 40-page transcript and summarize the internship experience in a narrative report. Prerequisite: Realtime Reporting Speed Development, Jury Charge 1 Advanced, Literary 1 Advanced, and Testimony 1 Advanced; Concurrent enrollment in Jury Charge 2 Advanced and Lit 2 Advanced is required.

**10-170-156 Testimony 1 Advanced (3 cr.)**

Prepares the learner to write 2-voice testimony material at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Prerequisite: Testimony 1 - Beginner; Concurrent enrollment in Testimony 1 Lab - Advanced is required.

**10-170-157 Testimony 2 Advanced (3 cr.)**

Prepares the learner to write 2-voice testimony material at 225 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Prerequisite: Testimony 2 - Beginner; Concurrent enrollment in Testimony 2 Lab - Advanced is required.

**10-170-159 Realtime Reporting Technology (2 cr.)**

Prepares the student to use CAT (Computer-Assisted Transcription) and real-time software; build personal dictionaries; and read, translate, and edit transcripts. Students are introduced to real-time translation procedures in court, depositions, captioning, and educational environments.

**10-170-160 Legal Terminology (1 cr.)**

Provides the student with the ability to spell, pronounce, and define legal terms.

**10-170-161 Realtime Reporting Technology Advanced (2 cr.)**

Prepares the learner to expand their knowledge of computer-assisted transcription and realtime software, dictionary management, specialized editing functions, transcript preparation, auto-included block files, and specialized macros for Steno-related tasks.

**10-170-171 Medical Reporting & Terminology (2 cr.)**

Prepares the student to write medical terminology in machine shorthand using appropriate medical terminology from material dictated at a minimum speed of 150 wpm for 5 minutes with a minimum of 95 percent accuracy. The student will research medical information, prepare salable transcripts, and submit timings. Prerequisite: Testimony 1 - Advanced

**10-170-184 English for Realtime Reporters (1 cr.)**

Enhances the student's ability to use proper English grammar, spelling, punctuation, capitalization, and vocabulary techniques in the transcription of the spoken word.

**10-170-804 Realtime Reporting 1 Lab (1 cr.)**

Prepares the learner to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms and phrases, words in their singular and plural forms, and prefixes and suffixes. Concurrent enrollment in Realtime Reporting 1 is required.

**10-170-805 Realtime Reporting 2 Lab (1 cr.)**

Expands the learner's ability to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffixes; numbers, frequently used words and phrases, contractions using the Z-rule, the "Flagged Alphabet", apply realtime conflict elimination principles, apply realtime theory and write dictation using a realtime theory. Concurrent enrollment in Realtime Reporting 2 is required.

**10-170-811 Literary 2 Lab Advanced (1 cr.)**

Expands the student's ability to write literary material at 180 words per minute for 5 minutes and transcribe at least three timings with 95 percent accuracy. Concurrent enrollment in Literary 2 - Advanced is required.

## 182 Logistics & Materials Management

**10-182-110 Business Logistics (3 cr.)**

Reviews logistics terminology, history of transportation, and government rules and regulations. Also studies supply chain management principles including total cost concepts, plant or warehouse location decisions, material handling options, and current logistics-related computer technologies.

**10-182-115 Procurement Fundamentals (3 cr.)**

Introduces the concepts and techniques of modern purchasing, including its role in business and industry, legal and ethical issues, contract administration, and supply chain management.

**10-182-116 Sustainable Materials Management (3 cr.)**

Explains how sustainable practices and technology can be applied to the supply chain to enhance profitability while reducing its overall environmental footprint. This course covers systems thinking, energy conservation within the supply chain, green procurement emerging trends and the three P's--people, planet and profit.

**10-182-117 Supply Chain Internship (3 cr.)**

Provides students with practical work experience in the supply chain management field. Internship work is supervised and evaluated.

# Course Descriptions

## **10-182-118 Principles of Inventory Management (3 cr.)**

Provides an operational knowledge and understanding of inventory management principles and techniques, sourcing strategies, the fundamental role of purchasing, purchase order management, ordering and stocking techniques, roles and responsibilities, and the impact inventory has on a business. The course provides practical examples and exercises, giving participants an opportunity to learn and practice inventory management techniques and concepts.

## **10-182-119 Principles of Operations Planning (3 cr.)**

Provides a fundamental knowledge and understanding of the basic inventory planning principles and techniques that are used at each level in the planning process, from strategic to tactical. The course provides practical examples and exercises, giving participants an opportunity to practice and enhance their own planning skills.

## **10-182-120 Principles of Manufacturing Management (3 cr.)**

Introduces the manufacturing environment and key manufacturing planning and control activities including material requirements planning, capacity management, capacity requirements planning, and lean manufacturing environments. Through discussion and interactive problem solving participants will gain a functional competency of production activity control and management.

## **10-182-121 Principles of Managing Operations (3 cr.)**

Focuses on the systems, information technologies, and process management tools involved in designing and operating the manufacturing and distribution environment. This course is concerned with the design of systems to produce goods and services and the operation of those systems. Explore relationships within business with an emphasis on ordering and distribution systems.

## **10-182-122 Principles of Distribution and Logistics (3 cr.)**

Introduces the foundations of planning and control in distribution and logistics. Explore the basics of logistics management, designing supply and distribution channels, and the principles and activities of warehousing and transportation management. Through discussion and problem solving, participants will learn about the role of logistics in supply chain management.

## **10-182-123 Supply Chain Career Exploration (1 cr.)**

Acquaints students with career options and related job skills, salaries and employment trends in the Supply Chain field. Familiarizes them with the different aspects that make up the supply chain and the various career path options.

## **10-182-124 Supply Chain Management, Introduction (2 cr.)**

Introduces the key concepts of supply chain management. Learn tips, techniques and best practices in supply chain operations. Students will stay up to date on the newest thinking, strategies, developments and technologies in supply chain management.

## **10-182-130 Supply Chain Management Capstone (3 cr.)**

Is a program capstone course that will apply foundational concepts from prior work in operations, inventory/procurement, and logistics/distribution to (1) understanding ERP system functionality; (2) analyzing data; (3) evaluating costs and benefits of cross--functional trade-offs; (4) applying solutions, (5) measuring outcomes; and (6) recommending improvements.

## **10-182-131 Fundamentals of Supply Chain Management (3 cr.)**

Introduces the key concepts of supply chain management. Students learn tips, techniques, and best practices in supply chain operations. Students will stay up to date on the newest thinking, strategies, developments, and technologies in supply chain management.

## **196 Management Development(SpvMgt)**

### **10-196-107 Business Management, Introduction to (3 cr.)**

An overview of the free enterprise system, types of business organizations, the managerial process, human resources management, business finance, management information systems and international business.

### **10-196-108 Contemporary Business Issues (3 cr.)**

Provides the skills and tools necessary to enhance professional success related to contemporary business issues and challenges of a manager/supervisor. Learners will demonstrate the application of professionalism, business communication and ethics, conceptual skills, critical thinking skills and contemporary workplace issues.

### **10-196-110 Cost Controls and Budgeting (3 cr.)**

Examines how financial information is interpreted and applied by supervisors/managers in planning and controlling business activities. This managerial accounting course emphasizes the budgeting process.

### **10-196-121 Safety, Principles of (2 cr.)**

Explains the supervisor's role in developing and implementing safety procedures and accident prevention programs in all types of work environments. It includes ergonomics, office safety, health care costs and Occupational Safety and Health Administration (OSHA) standards.



## **10-196-131 Problem Solving (2 cr.)**

Presents basic problem-solving techniques. Emphasizes the importance of identifying the real problem, identifying the causes, looking at alternative solutions, arriving at a solution and following up to ensure implementation.

## **10-196-139 Employee Training and Development (3 cr.)**

Identifies training and development skills through practice and skill-building activities. This course focuses on the role of training in the development of facilitation skills, using recognized training methods, and evaluating learning and training processes.

## **10-196-171 Management Development Field Study (1 cr.)**

Provides an opportunity for students to participate in an in-depth study/work experience specific to the Management Development program. All projects, study topics and work experience will be approved and evaluated by the course instructor.

## **10-196-190 Leadership Development (3 cr.)**

Covers the supervisor's role in leadership effectiveness. Topics include theories of leadership, development and implementation of teams, impact of leadership style, philosophy of corporate culture and leadership in the global marketplace.

## **10-196-191 Supervision (3 cr.)**

Uses a practical approach to training people in the basics of supervision and management. This course emphasizes the application of theory and covers management functions, the skills needed to perform those functions, the history of management, contemporary management trends, ethics, communication and total quality management.

## **10-196-192 Managing for Quality (3 cr.)**

Applies the skills and tools necessary to implement and maintain a continuous improvement environment. Each learner will demonstrate the application of a personal philosophy of quality, identifying all stakeholder relationships, meeting/exceeding customer expectations, a systems-focused approach, using appropriate models and tools, managing a quality improvement project and measuring effectiveness of continuous improvement activities.

## **303 Foods**

### **31-303-330 Kitchen Stewarding Basics 1 (4 cr.)**

Focuses on the flow of food through an organization including receiving, storing, food preparation, knife skills, machine operations, salad assembly, banquet platter presentation, catering, quality production, cleaning and maintenance, dish machine operation and kitchen sanitation.

### **31-303-331 Kitchen Stewarding Basics 2 (4 cr.)**

Provides learners the opportunity to build additional skills in the areas of basic kitchen production and workflow. Activities focus on a continuation of duties relative to receiving, storage, assembly, and presentation.

### **31-303-332 Front of the House Basics (2 cr.)**

Focuses on front of the house service requirements including bussing, stocking, hot and cold beverage stations, table setting, buffet presentation, banquet set-up and take-down, cashing and cash handling.

### **31-303-333 Field Experience 1 (1 cr.)**

Provides learners the opportunity to apply knowledge and skills in a food service setting. This is a non-compensated learning experience.

### **31-303-334 Field Experience 2 (1 cr.)**

Learners will apply knowledge and skills in a food service setting that provides a varied experience in the food service industry. This is a non-compensated learning experience.

## **304 Housing & Home Furnishings**

### **10-304-107 Interior Design Study Tour (1 cr.)**

Increases the students' awareness and appreciation of furnishings, design, architecture and the arts. Students view furnishing collections and survey and study architectural details and historic sites. Additional cost of trip.

### **10-304-110 Fundamentals of Design (3 cr.)**

Provides a foundation in the principles and elements of design. The understanding of good design, taste and creativity is stressed in student projects. Students use their projects in a design show.

### **10-304-125 Basic Interior Design (3 cr.)**

Focuses on the basic elements, materials, and mathematics of interior design. Topics include furniture arranging and the treatment of windows, walls and floors.

# Course Descriptions

## **10-304-126 Reupholstery (2 cr.)**

Studies manufacturers' upholstery methods and presents the techniques of upholstering and the art of reupholstering. Students reupholster a furniture piece.

## **10-304-127 Color Theory (3 cr.)**

Explores the basic principles of color. Color harmonies are correlated with practical problems as they apply to interior design. Students present their plans, selection of furnishings and colors for group discussion and critique.

## **10-304-128 Commercial CAD (2 cr.)**

Introduces the principles of computer-aided design and planning. Students develop floor plans and design workstations and open office systems.

## **10-304-129 Textiles (3 cr.)**

Studies textiles as they appear in interiors, taking the student from fiber to fabric. Topics include fibers, yarns, fabric construction, finishes and decorating techniques. Emphasis is on selection, care, use and textile legislation as related to the field of interior design.

## **10-304-134 Advanced Interior Design (2 cr.)**

Introduces advanced techniques for the design and calculation of draperies, bedding, kitchen and bath projects using workroom forms and computerized drawings.

## **10-304-135 Business Principles for Interior Design (1 cr.)**

Presents the business aspects of a career in interior design. Topics include business forms, billing procedures and business setup.

## **10-304-138 Internship 1 Kitchen & Bath (4 cr.)**

Provides students the use of skills gained through courses and related laboratory experiences. These courses provide the opportunities to test their philosophy, creativity, and theories, to make use of facts, knowledge and materials and to develop and refine skills and techniques while participating in the K&B business under the close supervision of experienced designers and qualified supervising instructors.

## **10-304-143 Design Applications (3 cr.)**

Applies previous course learning experiences to hypothetical residential and commercial design problems. Board layouts and oral presentations accompany each solution.

## **10-304-144 History of Furniture (3 cr.)**

Examines the history of art, architecture and furnishings from early Egypt through the Western World of the 20th century. Special attention is given to European court styles and the decorative arts of Colonial America.

## **10-304-146 Perspective Drawing (1 cr.)**

Introduces the theory of perspective drawing of interior spaces. Sketching techniques and perspective grids are used to create basic three-dimensional drawings of rooms.

## **10-304-150 Computer Basics for Design (1 cr.)**

Introduces the student to current Interior Design software used to create effective client presentations and professional portfolios. Students will get an overview of software used for 3D rendering, photo editing and presentation layouts.

## **10-304-152 Flooring (1 cr.)**

Helps the student with a special interest in carpet and flooring gain a further knowledge of flooring types and materials. Students practice planning layouts effectively and accurately. Selling tips are discussed.

## **10-304-153 Basic Kitchen and Bath (3 cr.)**

Provides students with the understanding of design elements and principles for kitchen and bath, including functions of the kitchen and bath as it relates to the house and its occupants. Application and knowledge of the NKBA Planning Guidelines, including assessment, measurement, product selection and communication of design will be introduced and applied to projects.

## **10-304-154 Construction Applications - Mechanical & Lighting (3 cr.)**

Demonstrates knowledge of standard building terms, mechanical, electrical, plumbing, heating and cooling systems. Students will become aware of communication with the trades, building changes as they relate to cost and specify materials to satisfy design criteria.

## **10-304-155 Business Procedures for Designers (3 cr.)**

Includes demonstration of ethical business practices, including the NKBA standards of conduct and NKBA business contracts, business tools and forms. Students will have an understanding of management policies, including profit margin, business plan development, HR practices, marketing and advertising.

## **10-304-156 Advanced Kitchen & Bath Design (3 cr.)**

Approaches solutions to advanced knowledge of NKBA Planning Guidelines. Course work will include universal design projects, mastery of solving problems, developing concept and theme design, producing professional working documents according to the NKBA Graphic and Presentation Standards. Students will produce floor plans, elevations, mechanical and construction drawings.

## **10-304-157 Materials & Estimating (3 cr.)**

Utilizes knowledge of appropriate cabinetry, appliances, ventilation, decorative plumbing and hardware, including surface and decorative materials. Students will competently research, estimate, recommend and order materials using product specification sheets.

## **10-304-161 Advanced CAD (2 cr.)**

Emphasis on the use of CAD (Computer Aided Design) as a means of determining project and client needs. Production of both two- and three-dimensional drawings will be used in the construction and presentation phases of the project.

## **10-304-166 Presentation Techniques (3 cr.)**

Introduces the student to a variety of techniques used in design communication. The student will learn and practice perspective drawing, illustration techniques and board layout styles. Good interior design requires adequate and appropriate methods of communication and presentation.

## **10-304-167 Drafting Skills for Interiors (3 cr.)**

Introduces the techniques and language of architectural drafting and construction. Basic floor plan and elevation drafting is practiced.

## **10-304-171 Internship 1 Interior Design (3 cr.)**

Provides students the use of skills gained through courses and related laboratory experiences. These courses provide the opportunities to test their philosophy and theories, to make use of facts, knowledge, materials, to develop and refine skills and techniques while participating in the area's business under the close supervision of experienced supervising instructors.

## **10-304-173 Interior Display (2 cr.)**

Provides hands-on experiences in the art of display and arrangement. Topics include the selection and display of accessories, floral design, matting and framing, tools and techniques for hanging art, event planning and visual display for retail design.

## **10-304-174 Introduction to Commercial Design (3 cr.)**

Introduces the design, specification and documentation of commercial interiors. Provides students with knowledge of space planning, programming, office furnishings, finishes and materials, lighting, codes, building systems, sustainability and client presentation. Students develop CAD skills by producing documentation and furniture plans.

## **307 Early Childhood Education**

### **10-307-102 Preschool Credential Capstone (3 cr.)**

Synthesizing the information and demonstrating mastery of the competencies through the completion of a portfolio. Capstone is the last course students take prior to completing the Preschool Credential. Student must be in early childhood setting with preschool age children (3 to 5 years) during this course.

### **10-307-111 Movement and Music for Children (3 cr.)**

Presents movement activities to help children develop sensory awareness, songs and rhythms to use in developing skills and concepts, and ways to help children have fun and learn through movement and music.

### **10-307-113 WI Model Early Learning Standards (1 cr.)**

Enhances the student's ability to analyze the guiding principles and the five developmental domains related to the WI Early Learning Standards, apply the WMELS to various developmentally appropriate curriculum models, activities and assessments, integrate the WI Early Learning Standards into the program's teaching cycle, evaluate learning and assessment activities using the early learning standards for each child.

### **10-307-130 Autism Spectrum Disorder (ASD) - Introduction (1 cr.)**

Provides an overview of Autism Spectrum Disorder (ASD) and information to support individuals of the ASD. Focuses on ASD and how individuals and families may be impacted, and differentiates between typical development and atypical development associated with ASD.

### **10-307-131 Autism Spectrum Disorder, Social Integration (2 cr.)**

Identifies social skill issues; facilitate play skills; monitor behaviors; and create supportive learning and play environments for children with Autism Spectrum Disorder (ASD). It is recommended that course 10-307-130 ASD, Introduction be taken prior to taking this course.

### **10-307-132 Autism Spectrum Disorder, Teaching Methods (3 cr.)**

Familiarizes the learner with evidence based practices for working with children with ASD. Students will collect, record, and apply data; implement behavior plans; utilize technology to support instruction; facilitate development of basic life skills; and communicate effectively with families, professionals, and others in the community.

# Course Descriptions

## **10-307-133 Curriculum for Family Child Care (3 cr.)**

Examines the unique aspects of planning curriculum for family child care settings. Integrates inclusive strategies through exploration of play-based learning and the utilization of observation and assessment techniques to promote child outcomes. Aligned with the Wisconsin Model Early Learning Standards and the National Association for Family Child Care Quality Standards.

## **10-307-134 Special Topics for Family Child Care (3 cr.)**

Explores special topics relevant to the family child care setting. Topics include quality standards, professional development, community resources, health and wellness practices, and family partnerships.

## **10-307-135 Family Child Care Capstone (3 cr.)**

Demonstrate the integration and application of specific concepts and skills of family child care including mixed-age curriculum, quality standards, professional development, community resources, health and wellness practices, family partnerships, and financial management. This capstone experience reflects the learner's knowledge of family child care through the development of a major project.

## **10-307-148 ECE: Foundations of Early Childhood (3 cr.)**

Introduces students to the early childhood profession. Course competencies include: integrate strategies that support diversity and anti-bias perspectives; investigate the history of early childhood education; summarize types of early childhood education settings; identify the components of a quality early childhood education program; summarize responsibilities of early childhood education professionals; and explore early childhood curriculum models.

## **10-307-151 ECE: Infant & Toddler Dev (3 cr.)**

Teaches infant toddler development as it applies to an early childhood education setting. Course competencies include: integrate strategies that support diversity and anti-bias perspectives; analyze development of infants and toddlers (conception to three years); correlate prenatal conditions with development; summarize child development theories; analyze the role of heredity and the environment and more.

## **10-307-166 ECE: Curriculum Planning (3 cr.)**

Examines the components of curriculum planning in early childhood education. Course competencies include: integrate strategies that support diversity and anti-bias perspectives; examine the critical role of play; establish a developmentally appropriate environment; examine caregiving routines as curriculum; develop activity plans that promote child development and learning and more.

## **10-307-167 ECE: Hlth Safety & Nutrition (3 cr.)**

Examines the topics of health, safety and nutrition within the context of the early childhood educational setting. Course competencies include: integrate strategies that support diversity and anti-bias perspectives; follow governmental regulations and professional standards as they apply to health, safety and nutrition; provide a safe early childhood program and more.

## **10-307-174 ECE: Practicum 1 (3 cr.)**

Applies the learned course competencies in an actual child care setting. The course competencies include: document children's behavior; explore the standards for quality early childhood education; explore strategies that support diversity and anti-bias perspectives; implement activities developed by the co-op teacher/instructor; demonstrate professional behaviors; practice caregiving routines as curriculum and more.

## **10-307-178 ECE: Art Music & Lang Arts (3 cr.)**

Focuses on beginning level curriculum development in the specific content areas of art, music and language arts. Course competencies include: integrate strategies that support diversity and anti-bias perspectives; examine the critical role of play; establish a developmentally appropriate environment; develop activity plans that promote child development and learning and more.

## **10-307-179 ECE: Child Development (3 cr.)**

Examines child development within the context of the early childhood education setting. Course competencies include: analyze social, cultural and economic influences on child development; summarize child development theories; analyze development of children ages three through eight; summarize the methods and designs of child development research and more.

## **10-307-180 Administration/Supervision-Early Childhood (3 cr.)**

Prepares participants to receive a certificate in childcare administration from FVTC and a credential as a childcare administrator from the Registry. This course includes an overview of the roles and responsibilities of directors, coordinators, supervisors and other administrators in early childhood programs. Must be a lead teacher or program director.

## **10-307-181 Managing Finances/Planning-Early Childhood (3 cr.)**

Includes a review of principles and practices of budget planning, budget preparation and fiscal management. Must be a lead teacher or program director.

**10-307-182 Operations Management-Early Childhood (3 cr.)**

Includes discussion and practical applications related to scheduling, staffing, facilities management, equipment acquisition and maintenance, service delivery, maintaining records and communication. Must be a lead teacher or program director.

**10-307-183 External Environments-Early Childhood (3 cr.)**

Examines the external factors and relationships which affect early childhood program quality and ability to flourish. Content includes how to conduct surveys, basic marketing principles, licensing and accreditation requirements, collaboration with other organizations, developing funding resources, advocacy, and working for and with change. Must be a lead teacher or program director.

**10-307-184 Best Practices/Young Children & Families (3 cr.)**

Includes information for establishing and maintaining quality programs based on professional standards and using the best available information on child growth and development in order to provide a family friendly service. Must be a lead teacher or program director.

**10-307-185 Administrative Seminar-Early Childhood (3 cr.)**

An advanced course in the six-course series required to receive a credential as a childcare administrator from The Registry and/or a certificate in childcare administration from FVTC. Major individual projects are required with a focus on integration of program aspects in developing strategies planning for change.

**10-307-187 ECE: Children w Diff Abilities (3 cr.)**

Focuses on the child with differing abilities in an early childhood education setting. Course competencies include: integrate strategies that support diversity and anti-bias perspectives; provide inclusive programs for young children; apply legal and ethical requirements including, but not limited to, ADA and IDEA and more.

**10-307-188 ECE: Guiding Child Behavior (3 cr.)**

Examines positive strategies to guide children's behavior in the early childhood education setting. Course competencies include: integrate strategies that support diversity and anti-bias perspectives; summarize early childhood guidance principles; analyze factors that affect the behavior of children; practice positive guidance strategies; develop guidance strategies to meet individual needs; and create a guidance philosophy.

**10-307-192 ECE: Practicum 2 (3 cr.)**

Applies the learned course competencies in an actual child care setting. The course competencies include: identify children's growth and development; maintain the standards for quality early childhood education; practice strategies that support diversity and anti-bias perspectives; implement student teacher-developed activity plans; identify the elements of a developmentally appropriate environment and more.

**10-307-194 ECE: Math Science & Soc St (3 cr.)**

Focuses on beginning level curriculum development in the specific content areas of math, science and social studies. Course competencies include: integrate strategies that support diversity and anti-bias perspectives; examine the critical role of play; establish a developmentally appropriate environment; develop activity plans that promote child development and learning; create developmentally appropriate science activities and more.

**10-307-195 ECE: Family & Community Rel (3 cr.)**

Examines the role of relationships with family and community in early childhood education. Course competencies include implement strategies that support diversity and anti-bias perspectives when working with families and community; analyze contemporary family patterns, trends and relationships; utilize effective communication strategies; establish ongoing relationships with families and more.

**10-307-197 ECE: Practicum 3 (3 cr.)**

Applies the learned course competencies in an actual child care setting. The course competencies include: assess children's growth and development; implement the standards for quality early childhood education; integrate strategies that support diversity and anti-bias perspectives; build meaningful curriculum; provide a developmentally appropriate environment; facilitate positive guidance strategies and more.

**10-307-198 ECE: Admin an ECE Program (3 cr.)**

Focuses on the administration of an early childhood education program. Course competencies include: integrate strategies that support diversity and anti-bias perspectives; analyze the components of an ECE facility; design an ECE program; analyze the aspects of personnel supervision; outline financial components of an ECE program; apply laws and regulations related to an ECE facility; and advocate for the early childhood profession.

# Course Descriptions

## **10-307-199 ECE: Practicum 4 (3 cr.)**

Applies the learned course competencies in an actual child care setting. Course competencies include: analyze children's growth and development based on assessment; integrate strategies that support diversity and anti-bias perspectives; promote professional behaviors and practices; implement meaningful curriculum; create respectful, reciprocal relationships; evaluate early childhood education programs for quality and more.

## **31-307-300 Early Childhood Assistant Teacher Internship (2 cr.)**

Provides learner the opportunity to apply knowledge and skills in an early childhood setting as they demonstrate mastery of the course competencies.

## **314 Baking**

### **10-314-109 Artisan Breads and Rolls (2 cr.)**

Offers an in-depth look at the production of breads and rolls. Learners study the principles involved in fermentation, mixing, scaling, proofing and baking. The following items are produced: artisan style breads and rolls, gluten-free breads, sour starters, bagels, pretzels, crackers, flat breads and multiple ethnic foods.

### **31-314-301 Advanced Cake Decorating (1 cr.)**

Focuses on advanced methods of cake decorations, including the use of royal icing, rolled fondant, and pastillage. Students will explore the design process and a variety of tools and materials used in cake decorating.

## **316 Culinary Arts**

### **10-316-100 Culinary Internship (2 cr.)**

Provides the culinary student the opportunity to investigate and learn through structured, hands-on experiences in the food service industry. It is specifically required that the learner be working in a food service establishment where tickets are generated and food is prepared to order.

### **10-316-101 Food Production, Introduction to (3 cr.)**

Introduces quantity food production to the non-culinary student. Topics include preparation of a variety of menu items, equipment use, cooking methods and terminologies, recipe conversion and the essentials of timing and coordination of service.

### **10-316-103 Pantry Production (1 cr.)**

Provides the learner with practical applications of fundamentals utilized in the pantry kitchen. Included in this course are the preparation of temporary and permanent emulsions, salad dressing, salad greens, fruits, vegetables, cheeses, cold meats and platter presentations.

### **10-316-104 Soup & Stock Production (1 cr.)**

Introduces the preparation of clear, cream, puree and specialty soups. Students prepare basic stocks and evaluate convenience soups and stocks for quality and cost.

### **10-316-105 Comfort Food Production (1 cr.)**

Introduces quantity food preparation procedures with emphasis on braising, stewing, simmering, roasting, baking and sauce making. Practical experience is given in banquet, restaurant and cafeteria food presentation techniques.

### **10-316-106 Complex Carbohydrates (1 cr.)**

Introduces the identification and preparation of a variety of grains, legumes, potatoes and farinaceous products to bring variety and nutritional balance into restaurant, catering and institutional menus.

### **10-316-107 Heart Healthy Cuisine & Light Sauces (1 cr.)**

Introduces quantity food preparation methods associated with reduced-fat cooking with emphasis on sauteing, broiling/grilling, poaching/steaming, stir-frying and pan-smoking. Computer-based nutritional analysis of recipes is applied.

### **10-316-110 Culinary Fundamentals (3 cr.)**

Applies the basic principles involved in the purchase, preparation and use of food stuffs. The proper identification and use of equipment and correct measuring techniques are covered. This course provides the theory basis for production courses.

### **10-316-111 Vegetables and Vegetarian (1 cr.)**

Introduces the learner to the identification, selection and application of a variety of meatless and vegetable preparation techniques. Emphasis is given to lacto-ovo and vegan disciplines, with proper preparation and selection of vegetables for retention of nutrients, color and plate presentation.

### **10-316-112 Baking, Principles of (1 cr.)**

Introduces basic baking principles and procedures and yeast-made products, cakes, pies, cookies, soft desserts and icings. Emphasis is on the products used in baking and their characteristics.

**10-316-113 Breakfast Cookery and Trends (1 cr.)**

Provides hands-on experience in all phases of short-order techniques. Students use various methods to prepare eggs, omelets, pancakes and breakfast meats.

**10-316-114 Garde Manger (1 cr.)**

Provides practical experience in preparing salad dressings, salad greens and vegetables. Storage and standards of quality and seasonal conditions relating to vegetable and fruits are emphasized.

**10-316-115 Lunch Cookery and Trends (1 cr.)**

Introduces lunch cookery through the use of grills, fryers, ovens and steamers. Service experience includes cafeteria line work and fast food delivery. Instruction is also given in safety and sanitation methods.

**10-316-116 Deli Operations (1 cr.)**

Presents the basics of deli operations including food preparation, food rotation, and inventory control and profit. The marketing aspect is also discussed.

**10-316-117 Convenience Bakery (1 cr.)**

Explores how to prepare and evaluate various convenience bakery products. Quality, cost, preparation methods and variety are emphasized.

**10-316-118 Sanitation for Food Service Operations (1 cr.)**

Focuses on the development of skills to follow sanitation and hygiene provisions in state codes. The Servsafe certification test is included.

**10-316-119 Nutrition for Culinary Arts (1 cr.)**

Focuses on the six major nutrients (carbohydrates, proteins, fats, minerals, vitamins and water) and how each is used by the body. The planning of well-balanced diets and the nutritional analysis of diets are emphasized.

**10-316-120 Culinary Applications (2 cr.)**

Applies the basic principles of culinary calculations involved in the purchase, preparation and use of goods related to the hospitality field.

**10-316-121 Baking Basics (2 cr.)**

Introduces baking skills learned through the production of a variety of pastries including quick breads, cookies, pies, cakes, yeast breads, pate a choux, and meringues. Proficiency will be demonstrated through production and use of equipment and ingredients.

**10-316-122 Baking Techniques (2 cr.)**

Learn foundational baking techniques including tarts, cakes, laminated doughs, custards, and sauces learned through production. Use of equipment and ingredients to create specific items will demonstrate proficiency. Presentation of baked goods and pastries is emphasized.

**10-316-123 Hospitality Supervision (3 cr.)**

Introduces fundamental management techniques including leadership styles; interpersonal skills; planning, organizing and decision-making processes, as well as interviewing, hiring, training and evaluating employees.

**10-316-124 Culinary Skills Development (1 cr.)**

Includes the observation and application of basic cooking patterns by proportion. These patterns include stocks, soups, sauces, dry heat and moist heat applications, vegetable applications, grains, and potato applications.

**10-316-125 Culinary Foundations (1 cr.)**

Prepares the entry-level culinary student for future success by introducing knife skills development, cooking principles and methods, and organizational skills and Mise en place (French phrase meaning "put in place" as in set up). Emphasis is placed on hands-on learning and skills development.

**10-316-129 Professionalism, Ethics and Etiquette (1 cr.)**

Explores the expectations of professionalism in the fields of culinary arts and hospitality. Students examine moral and ethical situations that can confront culinary and hospitality employees. Students also consider business etiquette and career planning.

**10-316-133 Meat Identification (1 cr.)**

Focuses on the federal program for meat and fish inspection. Meat grading classification (commercial and institutional) and purchasing are discussed. This course also provides practical lessons in meat preparation.

**10-316-134 Restaurant Operations - Preparation (4 cr.)**

Applies the principles and procedures of kitchen food preparation to a restaurant operation. This course covers production through service, including dining room management, catering and restaurant cooking.

**10-316-135 Restaurant Operations - Service (2 cr.)**

Applies the principles and procedures of food preparation to a restaurant operation. This course covers production through service, including dining room management, catering and restaurant cooking.

# Course Descriptions

## **10-316-136 Quantity Cooking (4 cr.)**

Introduces quantity food preparation procedures with emphasis in braising, stewing, simmering, roasting, baking, soup, stock and sauce making. Practical experience is given in restaurant, banquet, and cafeteria food presentation techniques. Identification of an assortment of grains, legumes, potatoes, and farinaceous products bring variety to menu planning.

## **10-316-137 Short Order Cooking (4 cr.)**

Provides hands-on experience in all phases of short order techniques. Students use various methods to prepare eggs, omelets, pancakes, and other breakfast items. Lunch cooking introduces the use of fryers, grills, ovens and steamers. Service experience includes line work and practical applications of salads, salad dressings, and greens

## **10-316-141 Food, Beverage and Labor Cost Controls (3 cr.)**

Covers the concepts and techniques of controlling costs with particular emphasis placed on the cost-to-sales relationship. Students calculate the cost of goods, selling price and relative percentages. They also forecast sales, conduct yield analyses and calculate break-even points.

## **10-316-142 Catering and Special Event Planning (2 cr.)**

Introduces how to develop, plan and execute catering and special events to the exacting details of the customer. Emphasis is on the importance of details in planning to achieve the best possible results. Activities will encourage both creative thinking and functionality to ensure customer satisfaction and business profitability.

## **10-316-150 Food Service Independent Study (1 cr.)**

Gives credit for a variety of educational explorations outside the traditional classroom setting. These activities include attending conferences and completing special courses and projects.

## **10-316-151 Asian Cuisine (1 cr.)**

Focuses on the preparation of foods from various Asian countries. The five regional styles of cooking in China are covered: Szechwan, Hunan, Fukien, Peking and Cantonese. Learners study the ingredients used in both Chinese and Japanese cooking, the utensils and how foods are presented.

## **10-316-152 European Cuisine (1 cr.)**

Applies cooking principles specific to the cuisine of various European countries. Food traditions and customs are emphasized.

## **10-316-154 Ice Carving (1 cr.)**

Covers the ice carving techniques used in on-premise catering. Each student completes an ice carving project.

## **10-316-155 Culinary Competition (2 cr.)**

Introduces students to the rules and regulations of culinary competition. Emphasis is on food styling concepts that meet the American Culinary Federation's judging standards.

## **10-316-170 Science of Baking (2 cr.)**

Focuses on identifying, applying and interpreting the scientific concepts of the baking process. Topics include recipe conversion, scaling, measurement, baking terminology, equipment identification and use, timing, heat transfer, ingredient functionality, presentation and display. This course combines lab and lecture activities.

## **10-316-172 Cake Production (1 cr.)**

Focuses on the production methods used in preparing a variety of cakes and cookies. Among the items produced are quick breads, muffins, filled and unfilled cakes, tarts, parfaits, bombes, flans and assorted cookies. The proper techniques of mixing, folding and creaming are emphasized.

## **10-316-173 Confections (1 cr.)**

Features chocolates and candies. Students learn about the handling and production of all types of chocolates, fudges, truffles, cremes, nougats, marzipan, pastillage, hard candies, seasonal treats, sugar work and frozen desserts including sorbet and ice cream.

## **10-316-174 Pastries (1 cr.)**

Introduces pastry production methods including short dough, rolled-in dough, pie dough, Danish dough, puff pastry dough and pate choux. Specialty preparations include butter cream, Bavarian cream, ganache, mousse, pudding, custard, meringues and petit fours.

## **10-316-181 Molecular Gastronomy (2 cr.)**

Explores the use of new food products, techniques and equipment that may influence future trends including molecular gastronomy (the scientific discipline that studies the physical and chemical processes that occur while cooking). This course also looks at some old world foods that are being reintroduced in new world ways for utilization on today's menus.



## **10-316-183 Grilling, Smoking & BBQ (2 cr.)**

Features a study of traditional BBQ around the United States, including smoking and grilling techniques with emphasis on different types of meats, fuels, woods and cookers used. The learner will prepare various marinades, brines, rubs, glazes, mops and sauces and will be introduced to KCBS competitions and events.

## **10-316-184 Advanced Garde Manger (2 cr.)**

Builds upon introductory garde manger principles with more insightful depth of smoking, preservation, pates, terrines and forcemeats. Also introduces fresh cheeses, mousses, appetizers and sauces.

## **10-316-185 Pairing Wines with Foods (2 cr.)**

Introduces basic wine knowledge and service to the student. Explores the principles of taste as it relates to the pairing of appropriate wines, spirits and beers with a wide range of food and flavor profiles.

## **10-316-186 Latin American Cuisine (1 cr.)**

Provides a brief study of Latin American culture and cuisines. Become familiar with traditional foods, beverages and cooking styles common to many of the countries and cultures in Latin America.

## **10-316-187 Local, Sustainable & Organic Food Products (2 cr.)**

Applies cooking and preservation techniques to fresh, local Wisconsin and organic agriculture and aquaculture products. Included in this course of study are the exploration and application of sustainable ecological principles and practices. Students will prepare a number of food items applying various cooking principles and flavored with a wide array of seasonings, herbs and spices.

## **402 Aeronautics**

### **10-402-101 Private Pilot-Ground (3 cr.)**

Covers ground training of aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Private Pilot certificate level. Cost: \$428.25, Program \$385.20, Material \$4.50, Activity Fee \$34.65 and Parking \$3.90. VA Students - Checkrides, FAA written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

### **10-402-102 Aviation Weather (3 cr.)**

Covers ground training of aviation weather, aviation human factors, aviation safety, and emergency operations to the Commercial Pilot certificate level. Cost \$428.25, Program \$385.20, Material \$4.50, Activity Fees \$34.65, Parking Fee \$3.90. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

### **10-402-103 Instrument-Ground (3 cr.)**

Covers ground training of aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Commercial Pilot certificate level with an emphasis on IFR operations. Cost \$428.25, Program \$385.20, Material \$4.50, Activity Fee \$34.65 and Parking Fee \$3.90. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

### **10-402-104 Commercial-Ground (3 cr.)**

Covers ground training of aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Commercial Pilot certificate level with an emphasis on multi-engine operations. Cost \$428.25, Program \$385.20 Material \$4.50, Activity Fee \$34.65, Parking Fee \$3.90. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

### **10-402-105 Aerodynamics (3 cr.)**

Covers ground training of aerodynamics and aircraft performance, aircraft design and limitations, and theories of flight to the Commercial Pilot certificate level. Cost \$428.25, Program \$385.20 Material \$4.50, Activity Fee \$34.65, Parking Fee \$3.90. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

# Course Descriptions

## **10-402-106 Aircraft Systems (3 cr.)**

Covers ground training of aircraft systems, aviation human factors, aviation law and regulation, aviation safety, airworthiness, and emergency operations to the Commercial Pilot certificate level. Cost \$458.25, Program \$385.20, Material \$4.50, Activity Fees \$34.65, Parking Fee \$3.90, Online fee \$30.00. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

## **10-402-107 CFI-Flight 1 (3 cr.)**

Covers ground and flight training of fundamentals of instructing, aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Commercial Pilot certificate level from the perspective of a multi-engine CFI applicant. Aircraft Type C152A, Course Hours: Dual 2, Simulator-Truflight 30, Ground 76. Cost \$2,448.82, Program \$385.20, Material \$189.00, Activity Fee \$34.65, Parking Fee \$3.90. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

## **10-402-110 Aircraft Instrument Systems (3 cr.)**

Operating principles and use of aircraft instrumentation will be introduced on pressure, gyroscopic, and direction indicating. Studies include operation and use of electronic systems for Flight Instrument, Attitude Direction Indicator, and Monitoring displays such as Centralized Aircraft Monitoring, Engine Indicator and Crew Alerting Systems. Engine instrument systems and components will be inspected to include troubleshooting procedures.

## **10-402-111 Basic Avionics Systems (3 cr.)**

Introduces avionics systems which will provide the student with the knowledge to understand the operation of communication and navigation components and systems. Emphasis is on familiarization with avionics systems used on aircraft and how these systems are utilized by the flight crew. Avionics systems introduce the following: Very High Frequency Omnidirectional Range (VOR), Instrument Landing Systems (ILS), Marker Beacon, Long-Range Navigation (LORAN C), Automatic Direction Finder (ADF), Distance Measuring Equipment (DME), Area Navigation (RNAV), Global Position Systems (GPS), Very High Frequency Communication Systems (VHF Com.), Audio Control Systems, Radar Altimeters, Transponders, Traffic Alert and Collision Avoidance Systems (TCAS), and Weather Radar Systems.

## **10-402-112 Materials and Installation (3 cr.)**

Introduces aerospace materials, hardware and processes. Students study the proper use of hand and power tools and precision measuring equipment. Safety is emphasized. Students do hands-on activities in sheet metal layout, bending and forming and install antennas and avionics equipment. They identify and inspect finishing materials.

## **10-402-114 Avionics Communications (3 cr.)**

Is the study of integrated communication systems typically used in general, corporate and commercial aviation aircraft. Very High Frequency Communication (VHF Com.), High Frequency Communication (HF Com.), Ultra High Frequency Communication (UHF Com.), Audio Control Systems, Selective Calling (SELCAL), Satellite Communications (SATCOM) and Transmitter Systems are emphasized in both the lecture and laboratory activities. The laboratory work provides in-depth, hands-on training in identifying, isolating, repairing and calibrating avionics communication systems with the use of standard avionics communication test equipment.

## **10-402-120 Commercial Instrument-Flight 2 (2 cr.)**

Covers ground and flight training of aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Commercial Pilot certificate level with an emphasis on IFR operations.

## **10-402-123 FCC License, Preparation for (1 cr.)**

An overview of the topics addressed in the first year of the Aircraft Electronics program. The student will study the necessary elements to prepare and write the Federal Communication Commission's General Radiotelephone Operator's License exam.

**10-402-124 Aeronautics, Introduction to (3 cr.)**

Provides an overview of aviation including the principles of flight. This course introduces aircraft systems and performance, navigation, basic meteorological concepts, aviation safety and specific regulations. The social and environmental impacts of aviation are discussed.

**10-402-130 Avionics Co-op 1 (1 cr.)**

Provides the framework for an Aircraft Electronics student to gain experience in an aircraft electronics-related repair/service business and earn one elective associate degree credit. Each placement is based on student and co-op site needs and is coordinated and supervised by FVTC Aircraft Electronics staff. Students participate in the program three hours a week. Department consent required.

**10-402-131 Aviation Safety & Human Factors, Intro to (1 cr.)**

Covers ground training of decision-making, situational awareness, crew coordination, communication, human error, fatigue, fitness, attitudes, training devices, controls, workload management, CRM, man/machine interference that may include pilot/aircraft interference or flight deck/cockpit design, so that the student understands and can identify how human factors affect aviation safety at an introductory level.

**10-402-132 Fundamentals of ATC and Airspace (1 cr.)**

Covers ground training of a fundamental knowledge of the ATC system in the United States, including navigational aids; airspace; communications; the Code of Federal Aviation Regulations; ATC procedures; control tower operations; non-radar operations; radar operations; and differing types of environmental concerns within a geographic area, so that the student can understand and apply critical elements of ATC within the National Airspace System (NAS).

**10-402-133 Applied Aviation Safety and Human Factors (1 cr.)**

Covers ground training of decision-making, situational awareness, crew coordination, communication, human error, fatigue, fitness, attitudes, training devices, controls, workload management, CRM, man/machine interference that may include pilot/aircraft interference or flight deck/cockpit design, so that the student understands and can identify how human factors affect aviation safety at an applied level.

**10-402-140 Avionics Control Systems (2 cr.)**

Studies the operation and use of Air Data Systems, Flight Director Systems, Autopilot Systems and Attitude and Heading Reference System (AHRS). The course examines the characteristics and integration of these systems and the control of the aircraft in flight. Emphasis is on aircraft control surfaces and information sources used to fly the aircraft. Laboratory activities provide practical application of servo, synchro slaved compass systems, flight director and autopilot systems.

**10-402-143 Avionics Surveillance Systems (3 cr.)**

A study of integrated surveillance avionics systems typically used in general, corporate and commercial aviation aircraft. Transponders, Traffic Alert and Collision Avoidance Systems (TCAS), Enhanced Ground Proximity Warning System (GPWS), and Weather Radar Systems are studied. The course stresses an understanding of each system's operation and use by the flight crew. Identifying, isolating, repairing and calibrating the systems, within the guidelines established by the manufacturer, are emphasized in the laboratory activities.

**10-402-144 Installation Project 1 (1 cr.)**

The student will utilize procedures for installation and removal of avionics electronic equipment on aircraft. The student will use federal rules and regulations; procedures for equipment layouts; proper installation of cable runs; proper use of sheet metal including cutting, bending and fabrication using the correct fasteners; maintenance records; and procedures used to properly compute weight and balance to complete an installation project.

**10-402-145 Installation Project 2 (1 cr.)**

A continuation of Installation Project 1 for completion of a more in-depth project. Students utilize procedures for installation and removal of avionics electronic equipment on aircraft. They will also use federal rules and regulations; procedures for equipment layouts; proper installation of cable runs; proper use of sheet metal including cutting, bending and fabrication using the correct fasteners; maintenance records; and procedures used to properly compute weight and balance to complete an installation project.

# Course Descriptions

## **10-402-146 Installation Project 3 (1 cr.)**

A continuation of Installation Project 2. Students utilize procedures for installation and removal of avionics electronic equipment on aircraft. They also use federal rules and regulations; procedures for equipment layouts; proper installation of cable runs; proper use of sheet metal including cutting, bending and fabrication using the correct fasteners, maintenance records and procedures used to properly compute weight and balance to complete an installation project.

## **10-402-157 CFI-Flight 3 (1 cr.)**

Covers ground and flight training of fundamentals of instructing, aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Commercial Pilot certificate level from the perspective of a single-engine CFI applicant and completes the CFI ME practical test.

## **10-402-160 Aircraft Electrical Power (3 cr.)**

Introduces aircraft power sources and starting systems. Students complete maintenance and troubleshooting on batteries, generators, alternators and starters. Aircraft electric motor operation and systems application are also covered.

## **10-402-161 Aviation Regulations & Publications (2 cr.)**

Studies FAA and manufacturers' publications. FAA regulations for certification, maintenance and aircraft airworthiness are reviewed. Students identify FAA-approved publications and procedures to perform maintenance to an airworthy standard including aircraft record requirements.

## **10-402-163 Aircraft Electrical Systems (3 cr.)**

Aircraft electrical systems and component operation will be introduced. Projects will allow students to develop skills in wiring installation, termination, repairs and inspection of systems. Maintenance of controls, switches, indicators and protective devices will be introduced to develop servicing and troubleshooting skills.

## **10-402-166 Maintenance Forms & Records (1 cr.)**

Students will understand the application of Federal Aviation Regulations and requirements for aircraft maintenance records. Maintenance record entry procedures and details required for various operations will be introduced. Requirements and procedures for completion of FAA forms and documentation for Major Repairs, Inspections, and Weight & Balance records will be covered. Typical industry work order, parts tagging, time controlled parts and inspection monitoring will be identified.

## **10-402-167 Technical Drawings & Diagrams (1 cr.)**

Students will read and use aircraft blueprints, draw sketches of aircraft repairs and alterations. Identify symbols and utilize schematic diagrams, graphs and charts in specific applications. Apply troubleshooting skills to systems with the use of electrical wiring diagrams.

## **10-402-168 Human Factors (1 cr.)**

Maintenance resource management issues are introduced. The study of airline safety, human error in maintenance, human factors fundamentals, worker safety, communication, team work, situation awareness, and performance management.

## **10-402-169 Avionics Navigational Systems (3 cr.)**

A study of integrated navigational avionics systems typically used in general, corporate and commercial aviation aircraft. VHF Omni directional Range (VOR), Instrument Landing Systems (ILS), Marker Beacon, Global Positioning System (GPS) and Distance Measuring Equipment (DME) are emphasized in both the lecture and laboratory activities. The laboratory work provides in-depth, hands-on training in identifying, isolating, repairing and calibrating avionics systems with the use of standard avionics test equipment.

## **10-402-186 Commercial Instrument-Flight 3 (3 cr.)**

Covers ground and flight training of aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Commercial Pilot certificate level with an emphasis on single-engine operations. Aircraft Type C172, Course Hours: Dual 18.5, Solo 18, Phase Check 1.5. Simulator-Truflight 16, Ground 40. Cost \$7,367.50, Program \$385.20, Material \$189.00 Activity Fee \$34.65, Parking Fee \$3.90. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

## **10-402-191 Private Pilot-Flight (3 cr.)**

Covers ground and flight training of aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Private Pilot certificate level. Aircraft Type: C172, Course Hours: Dual 34.5, Solo 10, Phase check 4, Checkride 1.5, Simulator Hours-F141/142/RB/Mentor 4, Ground 65. Cost: \$9549.16, Program \$385.20 Material \$189.00 Activity Fee \$34.65 Parking Fee \$3.90. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

## **10-402-192 Commercial Instrument-Flight 1 (3 cr.)**

Covers ground and flight training of aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Commercial Pilot certificate level with an emphasis on IFR Operations. Aircraft Type C172, Course Hours: Dual 49, Solo 0, Phase Check 4.5, Checkride 1.5. Simulator-F141/142/RB/Mentor 15, Ground 50. Cost \$11,236.02, Program \$385.20, Material \$189.00, Activity Fee \$34.65, Parking Fee \$3.90. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

## **10-402-194 Commercial Instrument-Flight 4 (3 cr.)**

Covers ground and flight training of aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Commercial Pilot certificate level with an emphasis on multi-engine operations. Aircraft Type C172, Course Hours: Dual 14, Solo 12, Phase Check 1.5, Checkride 1.5. Aircraft BE-76 Dual 30.5, Phase Check 3, Checkride 1.5, Simulator-Truflight 20, Simulator-F141/142/RB/Mentor 8, Ground 39. Cost \$18,697.16, Program \$385.20, Material \$189.00, Activity Fee \$34.65, Parking Fee \$3.90 VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

## **10-402-195 CFI-Flight 2 (3 cr.)**

As a continuation of 10-402-107, this course covers ground and flight training of fundamentals of instructing, aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Commercial Pilot certificate level from the perspective of a multi-engine CFI applicant. Aircraft Type BE-76, Course Hours: Dual 14, Phase Check 2, Ground 92. Cost \$5,830.46, Program \$385.20, Material \$189.00, Activity Fee \$34.65, Parking Fee \$3.90. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

# Course Descriptions

## **10-402-198 CFI-Flight 4 (1 cr.)**

Covers ground and flight training of fundamentals of instructing, aerodynamics and aircraft performance, aircraft systems, aviation human factors, air traffic control and airspace, aviation law and regulation, aviation weather, aviation safety, airworthiness, flight maneuvers, weight and balance, navigation, and emergency operations to the Commercial Pilot certificate level from the perspective of an instrument airplane CFI applicant. Plane Type C172, Course Hours: Dual 12, Phase Check 1.5, Checkride 1.5, Simulator-Truflight 3, F141/142RB/Mentor Dual 10, Ground 27. Cost: \$4,064.81, Program \$128.40, Material \$63.00, Activity Fee \$11.55, Parking Fee \$1.30. VA Students - Checkrides, FAA Written test, and additional flight training time above FAA minimums, supplemental simulator, books and other supplies are not covered by Federal VA benefits and the WI GI Bill. Costs are for the 2015-16 school year, and are subject to change.

## **32-402-310 Aircraft Powerplants 1 (4 cr.)**

Covers aircraft powerplants dealing with the theory of internal combustion engines (reciprocating overhaul). Students will disassemble, clean, inspect and reassemble engines. The theory of operation, inspection techniques and tools, the proper use of manuals and the application of FAR's to engine overhaul and maintenance also are included.

## **32-402-315 Powerplant Systems 1 (3 cr.)**

Covers the principles of fire protection and induction and exhaust systems including maintenance, inspection and troubleshooting of components and systems.

## **32-402-316 Powerplant Systems 2 (2 cr.)**

Outlines aircraft ignition systems. Students learn about aircraft magneto, turbine ignition, high and low tension ignition systems, and the construction and functioning of the aircraft sparkplug. Appropriate FAA regulations and the use of manufacturers' manuals are stressed.

## **32-402-322 Aircraft Systems 1 (2 cr.)**

Teaches students the principles of cabin atmosphere control and fuel systems. Typical systems are studied using aircraft maintenance installation and the overhaul of various components. Included is the study of vacuum, de-icing, oxygen and airframe fuel systems.

## **32-402-323 Aircraft Systems 2 (4 cr.)**

Focuses on aircraft hydraulic, pneumatic, and fire detection and protection systems. It also covers basic principles and system designs, the purpose and functioning of the individual units, and maintenance overhaul and testing of units and systems.

## **32-402-326 Structural Materials (3 cr.)**

Students will learn to apply basic concepts of inspection and maintenance of wood aircraft structures and fabric covering. The development and industry integration of advanced composite materials will be introduced. Extensive hands on projects with composite materials will use vacuum bag techniques with heat application in repairs of composite materials. Inspection and maintenance of aircraft plastics will be experienced.

## **32-402-327 Maintenance and Service (3 cr.)**

Focuses on the techniques of servicing and repairing aircraft and the systematic inspection of the entire airframe, powerplant and accessories. Fundamentals of rigging flight controls and operation of rotary wing aircraft are introduced.

## **32-402-331 Aircraft Powerplant 2 (4 cr.)**

Emphasizes the theory, repair and troubleshooting of aircraft turbine engines. Hot section inspection, ground servicing, engine run-up, inspection procedures, use of various test equipment and engine instruments are covered. Regulations and use of manufacturers' manuals are stressed.

## **32-402-333 Aircraft Inspection and Analysis (3 cr.)**

Provides an introduction to non-destructive inspection, including magnetic particle, dye penetrant, eddy current, and ultrasonic testing. Students will also apply advanced design and completion techniques for metallic structure repair. Metallurgy and heat treatment of ferrous and non-ferrous metals are also explored.

## **32-402-337 Powerplant Systems 3 (3 cr.)**

Examines such topics as aircraft carburetion, float, injection and turbine fuel metering, as well as the maintenance and overhaul of associated fuel system components. Appropriate FAR's and manufacturers' procedures are followed.

## **32-402-339 Propellers (2 cr.)**

Explains the construction and operating principles of propellers and propeller systems. Federal Aviation Administration regulations and manufacturers' specifications relating to the installation, inspection and maintenance of propellers and their systems are addressed.

## **405 Auto Body-Chassis & Finish**

### **10-405-119 Industry Trends Vehicle Repair (1 cr.)**

Familiarizes students with the auto collision repair industry. Students complete written and oral reports based on information obtained from trade publications, manuals and technical newsletters.

**10-405-120 Collision Repair Mech - HVAC (2 cr.)**

Provides the learner with the knowledge to locate, identify, inspect, test, and repair or replace both heating and cooling system components. Students also diagnose both heating and cooling systems for leaks, belt and pulley alignment, and safely identify, label, store, evacuate, recharge, replace, and recycle coolants and refrigerants in accordance with EPA regulations.

**10-405-122 Collision-Drive Systems (2 cr.)**

Provides the learner with the knowledge to locate, identify, inspect, diagnose, and repair or replace collision damaged brake system, drive train, fuel, and emission system components.

**10-405-128 Collision Repair Electric Sys-SRS (1 cr.)**

Explains that today's vehicles use multiple safety features to provide occupant protection during a collision. This course introduces learners to restraint and supplemental restraint systems operation, troubleshooting, diagnosis, and repair.

**10-405-129 Collision Steering & Suspension Systems (3 cr.)**

Focuses on developing the skills needed to diagnose and repair steering and suspension systems including wheel alignment procedures on collision damaged vehicles.

**10-405-130 Collision Electrical & Electronic Systems 1 (2 cr.)**

Focuses on developing the skills needed to diagnose and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis and wire repair on collision damage vehicle.

**10-405-143 Introduction to Collision Repair Welding (1 cr.)**

Provides instruction in welding safety; introduction to the GMAW (MIG) welding process and equipment; and skills training in GMAW (MIG) welding on light gauge automotive steels in the flat, vertical and overhead positions. Students apply safe welding standards to a variety of industry applications on metals in a lab setting.

**10-405-144 Collision Repair Welding 1 (2 cr.)**

Provides instruction in welding safety; introduction to the GMAW (MIG) welding process and equipment; and skills training in GMAW (MIG) welding on light gauge automotive steels in the flat, vertical and overhead positions. Students apply safe welding standards to a variety of industry applications on metals in a lab setting.

**10-405-146 Collision Repair Welding 2 (2 cr.)**

Provides instruction and skills training in oxy acetylene and plasma arc cutting, GMAW (MIG) welding on structural grade automotive steels in the flat, vertical and overhead positions. Students apply safe welding standards to a variety of industrial applications on metals in a lab setting. Squeeze type resistance spot welding (STRSW), welding aluminum and silicone bronze is also introduced to students in this course.

**10-405-147 Intro, Transportation Welding (1 cr.)**

Focuses on welding and cutting safety, and develops skills in welding and cutting of metals used in the transportation trades. Methods of welding include gas metal arc welding (MIG) in the horizontal, vertical, and overhead positions. Methods of cutting include oxy-fuel and plasma arc cutting of metals. Students will learn to set up and maintain welding equipment and weld and cut a variety of types and thicknesses of materials commonly used in the transportation trades.

**10-405-180 Intro to Collision Repair (2 cr.)**

Focuses on developing the skills in professionalism, safety, and the use of basic hand and power tools and equipment in accordance with industry-accepted standards. Students are introduced to collision repair industry terms and definitions, as well as identifying and using collision repair information and procedures.

**10-405-181 Intro to Automotive Refinishing (2 cr.)**

Provides the learner with safety considerations and environmental regulations and how they apply to surface coating application. Emphasis is on personal protection, types of equipment operation and maintenance, and spray gun set-up and transfer efficiencies. Learners are also introduced to buffing and polishing in this course.

**10-405-182 Collision Repair Non Struct 1 (2 cr.)**

Provides the learner the opportunity to develop the skills, knowledge and process of removal, replacement and storage of interior and exterior trim, disarming/arming restraint systems and adjustment to moveable glass, lamps bumpers and moveable tops.

**10-405-183 Collision Repair Non Struct 2 (2 cr.)**

Provides the learner the opportunity to develop the skills required to identify different types of vehicle construction, develop a repair plan, align bolted and moveable exterior panels while utilizing appropriate tools.

# Course Descriptions

## **10-405-184 Collision Repair Non Struct 3 (2 cr.)**

Provides the learner the opportunity to develop the skills and knowledge of sheet metal characteristics, repair sequences, and the processes for straightening while maintaining corrosion.

## **10-405-185 Collision Repair Non Struct 4 (2 cr.)**

Provides the learner the opportunity to develop the skills and knowledge to utilize a damage report for the removal and application of sealers, undercoats, corrosion protection and various types of foams. Additionally, students will determine repair/replace choices, perform panel bonding and welding, and perform aluminum panel repair procedures.

## **10-405-186 Plastics and Composites (1 cr.)**

Explains that the use of plastics is commonplace on vehicle construction. Plastics are commonly damaged during a collision, and repairs to the plastic may be required. This course provides the learner with the knowledge, processes, and skills required to identify the type of plastic, the possible repair options, the repair techniques, and the refinishing options and techniques for various types of plastics.

## **10-405-187 Collision Refinishing Surface Preparation (2 cr.)**

Teaches students to prepare surfaces to be refinished by utilizing cleaning, sanding, and masking techniques, while protecting non-refinish areas of the vehicle from overspray and component damage. Learners also develop existing finish defect and substrate assessment along with primer product choices.

## **10-405-188 Refinish and Topcoat Application (3 cr.)**

Covers locating and mixing automotive color formulas and procedures for applying automotive finishes, including spray gun operation and technique. Blending is also introduced in this course.

## **10-405-189 Refinishing, Tinting, & Blending (2 cr.)**

Covers procedures for applying automotive finishes, including advanced spray gun setup considerations and techniques and blending additives. Also included is an in-depth study and application of color movement, along with color assessment tools.

## **10-405-190 Collision Refinishing-Advanced (3 cr.)**

Covers the application and blending of automotive multi-stage finishes, the use of waterborne refinishing materials, and improving efficiency during the refinishing process. Refinishing defect identification, diagnosis and repair is also covered, with emphasis on learning how to avoid defects while refinishing. Preparing a vehicle for customer pickup, including proper vehicle detailing, interior cleaning, engine compartment cleaning, exterior cleaning, polishing, and application of decals, stripes, and graphics, is also covered.

## **10-405-191 Collision Repair Structural 1 (3 cr.)**

Provides the learner the opportunity to develop the skills and knowledge to perform inspections of automotive structural components and determine the extent of damage.

## **10-405-192 Collision Repair Structural 2 (3 cr.)**

Provides the learner the opportunity to develop the skills and knowledge to utilize anchoring and pulling equipment for straightening, realigning, replacing and sectioning unibody structural components, sections and other vehicle outer panels. Additionally, students will utilize power and hand tools for cutting, welding, stress relieving and replacing corrosion protection.

## **10-405-193 Collision Repair Structural 3 (2 cr.)**

Provides the learner the opportunity to develop the skills and knowledge to utilize anchoring and pulling equipment for straightening, realigning, replacing and sectioning frame structural components. Additionally, students will utilize power and hand tools for cutting, welding, stress relieving, replacing fixed glass and corrosion protection.

## **10-405-194 Collision Repair Estimating (1 cr.)**

Provides the opportunity for the learner to develop skills in auto body construction, model identification, damage analysis, parts sources, handwritten damage reports and computerized damage reports and shop management.

## **10-405-195 Collision Repair Customer Relations (1 cr.)**

Focuses on developing skills in professionalism, customer relations and service, and provides an overview of what collision repair businesses and insurance companies will expect from their employees in regards to customer retention. Students are introduced to phone answering skills, interpersonal communication skills, and preparing and presenting damage reports to the customer. Topics also covered include parts ordering and vehicle scheduling, dealing with customer complaints and problem-solving.



## 409 Cabinetmaking & Millwork

### 31-409-301 Drafting for the Woodworking Industry (2 cr.)

Create computer generated drawings using AutoCAD software. Explore the thought processes and concepts necessary for creating accurate, dimensioned working drawings for use in the woodworking industry.

### 31-409-302 Material Properties and Applications (2 cr.)

Introduce the physical properties of wood and related woodworking materials. Identify wood specie and the nature of wood. Explore adhesives and abrasives commonly used in the woodworking industry. Clamping techniques along with the use and identification of metal fasteners for the woodworking industry will be covered in this course.

### 31-409-303 Sanding and Panel Processing (2 cr.)

Exposure to machines used for panel processing and machines used in the sanding process. Safely and efficiently perform machining tasks on a sliding table panel saw. Use various portable sanders, stationary sanders, and the wide belt sander. A wooden toolbox will be built.

### 31-409-316 Drafting for the Woodworking Industry (3 cr.)

Create computer generated drawings using AutoCAD software. Explore the thought processes and concepts necessary for creating accurate, dimensioned working drawings for use in the woodworking industry.

### 31-409-317 Layout and Sawing Operations (2 cr.)

Explore basic layout and measurement practices using both English and metric units. Exposure to woodworking machines designed for sawing with strong emphasis given to machining to specification. Develop safe and efficient machining habits associated with sawing wood.

### 31-409-318 Material Properties and Applications (3 cr.)

Introduce the physical properties of wood and related woodworking materials. Identify wood specie and the nature of wood. Explore adhesives and abrasives commonly used in the woodworking industry. Clamping techniques along with the use and identification of metal fasteners for the woodworking industry will be covered in this course.

### 31-409-319 Milling Operations (2 cr.)

Safely and efficiently perform machining tasks associated with milling wood. An emphasis is given to the lumber milling procedures involved with converting rough lumber to material that is machined flat, square and to a specified thickness, width, and length. Exposure to the portable hand router and routing practices.

### 31-409-320 Sanding and Panel Processing (3 cr.)

Exposure to machines used for panel processing and machines used in the sanding process. Safely and efficiently perform machining tasks on a sliding table panel saw. Use various portable sanders, stationary sanders, and the wide belt sander. A wooden toolbox will be built.

### 31-409-321 Shaping and Molding (3 cr.)

Operate production style woodworking machines. Safely and efficiently perform machining operations on a gang-feed rip saw, an S4S milling machine, a CNC mortiser & tenoner, and a 6-headed molder. Proper set-up and an in-depth exploration into the numerous operations that can be performed on a wood shaper.

### 31-409-322 Blueprint Reading for Woodworking Industry (3 cr.)

Read and interpret blueprints. Extract dimensions, machining details, and material and construction specifications from a blueprint. Utilize symbols, terminology, and the graphic language commonly used in the woodworking industry. Determine direct costs and overhead expenses.

### 31-409-323 CNC Router Operation (4 cr.)

Program and operate a CNC controlled router. Explore CNC router operation by reading and writing G-Code. Load machine programs into the router and become familiar with the multitude of machining operations a CNC router can perform.

### 31-409-324 Frameless Cabinetry (3 cr.)

Produce frameless cabinetry. Explore panel layout and processing associated with this style of cabinet construction. Learn construction doweling and line-boring specifications along with the techniques for installing European style hinges and drawer slides. Processes associated with the cutting, application, and routing of plastic laminates will also be covered.

### 31-409-325 Traditional Cabinetry (3 cr.)

Exposure to the construction methods and processes that are associated with traditionally built, face-frame style cabinets. Construct a "beaded-inset" face-frame into which learners will then hang an inset door using traditional butt hinges. Learners will also gain exposure to solid-surface fabrication techniques.

### 31-409-326 Veneering, Finishing & Joinery Methods (3 cr.)

Explore woodworking processes that must efficiently combine multiple steps and/or multiple materials. Use solvent-based and water-based finishing materials. Gain experience in cutting, seaming, and laminating veneer. Create jigs and fixtures to make the machining of various types of joinery more efficient, accurate, and safe.

# Course Descriptions

## **31-409-327 Furniture Exploration 1 (3 cr.)**

Construct a furniture piece using leg-and-rail style joinery. A minimum of two identical projects must be built to emphasize the importance of machining to specification. Learners will create a component cut-list, machining process sequence list and an estimated timeline for the completion of the furniture project.

## **31-409-328 Furniture Exploration 2 (3 cr.)**

Construct a furniture piece using carcass style joinery. A minimum of two identical projects must be built to emphasize the importance of machining to specification. Learners will create a component cut-list, machining process sequence list and an estimated timeline for the completion of the furniture project.

## **31-409-330 Blueprint Reading for Woodworking Industry (2 cr.)**

Read and interpret blueprints. Extract dimensions, machining details, and material and construction specifications from a blueprint. Utilize symbols, terminology, and the graphic language commonly used in the woodworking industry. Determine direct costs and overhead expenses.

## **31-409-331 CNC Router Operation (3 cr.)**

Program and operate a CNC controlled router. Explore CNC router operation by reading and writing G-Code. Load machine programs into the router and become familiar with the multitude of machining operations a CNC router can perform.

## **31-409-332 Traditional Cabinetry (2 cr.)**

Exposure to the construction methods and processes that are associated with traditionally built, face-frame style cabinets. Construct a "beaded-inset" face-frame into which learners will then hang an inset door using traditional butt hinges. Learners will also gain exposure to solid-surface fabrication techniques.

## **31-409-352 Tool Design and Maintenance (1 cr.)**

Explore the design and edge geometry associated with cutting tools. Learners will sharpen various cutting tools and learn how to select the best cutting tool for a given application. Routine machine maintenance will also be explored.

## **410 Wood Technics - Manufacturing (Carpentry)**

### **31-410-315 Introduction to AutoCAD-Construction (2 cr.)**

Introduces the student to basic AutoCAD commands and techniques. Instruction during the first half of the course focuses on basic drawing and editing commands. During the second half of the course, students will use AutoCAD software to prepare, dimension, annotate and plot various residential construction drawings and details.

### **31-410-330 Exterior Finish Principles (RBC) (2 cr.)**

Introduces the tools, materials and methods to complete the exterior covering and finish of a house. Topics include roof coverings, mechanical flashing, fascia and soffit systems, windows and door installation, siding and exterior detailing. Students must demonstrate proficiency with related tools and satisfactorily complete lab exercises before engaging in project activity.

### **31-410-331 Interior Closure Principles (RBC) (2 cr.)**

Focuses on the principles of temperature control, moisture control and interior wall finish. Topics of study include insulation materials, ventilation methods, building wraps, vapor barriers, sheetrock installation, drywall finish and drywall repair. Students learn about current building science for avoiding common building problems such as condensation, mold and ice dams.

### **31-410-333 Interior Finish Principles, Basic (RBC) (3 cr.)**

An overview of the residential millwork industry. Students gain knowledge of millwork manufacturing, product distribution and profile recognition in classroom assignments. Lab activities include demonstration and extensive practice installation of jambs, doors and casing. Emphasis is on developing superior carpentry skills in a lab setting prior to completion of the student project.

### **31-410-334 Interior Finish Principles, Intermediate (RBC) (3 cr.)**

Continues the study of interior trim materials undertaken in Interior Finish Principles, Basic. In the classroom, students learn about stair parts, interpret cabinet drawings, evaluate countertop materials and study the basics of hardwood flooring installation. In the lab, students receive a demonstration of hardwood flooring installation and develop skill installing base and crown molding.

## **31-410-335 Blueprint Reading & Estimating-Construction (2 cr.)**

Combines a study of residential blueprint reading and residential construction estimating. Students learn to estimate the labor and material necessary to construct a house by examining all plans, elevations and details that are commonly found in residential drawings. Students will practice both manual and computer-based estimating techniques as they work with spreadsheets and published data for estimating residential construction costs.

## **31-410-352 Frame Construction Principles (RBC) (3 cr.)**

Examines the theory and practice of residential framing techniques. Topics include light-frame construction of floors, walls and roofs. Proper use of dimensional lumber, engineered lumber and panel sheathing is stressed. The Uniform Dwelling Code and manufacturers' literature is used to size load-carrying members and comply with applicable codes. In the lab, students practice laying out floors, stairs and walls. Students learn to use a framing square to calculate and lay out common types of rafters in completion of a roof mock-up.

## **31-410-353 Exterior Finish Principles (RBC) (4 cr.)**

Introduces the tools, materials and methods to complete the exterior covering and finish of a house. Topics include roof coverings, mechanical flashing, fascia and soffit systems, windows and door installation, siding and exterior detailing. Students must demonstrate proficiency with related tools and satisfactorily complete lab exercises before engaging in project activity.

## **31-410-354 Exterior Finish Project (RBC) (3 cr.)**

Challenges students to complete the exterior of a house or other projects on a construction site. Students will install roofing, aluminum soffit systems, windows and manufacturing siding. Emphasis is on flashing details which maintain the integrity of a building's drainage plane and fastening details which provide for differential movement of modern manufactured materials.

## **31-410-355 Interior Closure Principles (RBC) (4 cr.)**

Focuses on the principles of temperature control, moisture control and interior wall finish. Topics of study include insulation materials, ventilation methods, building wraps, vapor barriers, sheetrock installation, drywall finish and drywall repair. Students learn about current building science for avoiding common building problems such as condensation, mold and ice dams.

## **31-410-356 Interior Closure Project (RBC) (3 cr.)**

Offers the opportunity to complete the insulation, vapor barrier and drywall of the on-site student project. Students use principles learned in lab and classroom activities to select, cut, fasten, install and finish interior materials according to accepted trade standards.

## **31-410-357 Interior Finish Principles, Basic (RBC) (4 cr.)**

An overview of the residential millwork industry. Students gain knowledge of millwork manufacturing, product distribution and profile recognition in classroom assignments. Lab activities include demonstration and extensive practice installation of jambs, doors and casing. Emphasis is on developing superior carpentry skills in a lab setting prior to completion of the student project.

## **31-410-358 Interior Finish Project, Basic (RBC) (3 cr.)**

Develops interior finish competence as students work independently to complete individual tasks at the site. Students receive hands-on experience installing underlayment, window extension jambs, door jambs, interior doors and casing in the student project.

## **31-410-359 Interior Finish Principles, Intermediate (RBC) (4 cr.)**

Continues the study of interior trim materials undertaken in Interior Finish Principles, Basic. In the classroom, students learn about stair parts, interpret cabinet drawings, evaluate countertop materials and study the basics of hardwood flooring installation. In the lab, students receive a demonstration of hardwood flooring installation and develop skill installing base and crown moulding.

## **31-410-360 Interior Finish Project, Intermediate (RBC) (3 cr.)**

Further develops finish carpentry skills and production efficiency through installation of moulding, cabinets and countertop material in completion of the student construction project. Students are shown how to recognize, evaluate and resolve common millwork installation problems arising at the construction project.

## **31-410-361 Frame Construction Principles (RBC) (4 cr.)**

Examines the theory and practice of residential framing techniques. Topics include light-frame construction of floors, walls and roofs. Proper use of dimensional lumber, engineered lumber and panel sheathing is stressed. The Uniform Dwelling Code and manufacturers' literature is used to size load-carrying members and comply with applicable codes. In the lab, students practice laying out floors, stairs and walls. Students learn to use a framing square to calculate and lay out common types of rafters in completion of a roof mock-up.

# Course Descriptions

## **31-410-362 Frame Construction Project (RBC) (3 cr.)**

Provides students with on-site framing experience. Working in groups of 3-4 students, members plan, lay out and frame assigned sections of the floor, wall and roof systems of a house. Safe work practices, thorough planning and attention to detail are stressed in all phases of frame construction.

## **31-410-363 Residential Building Codes and Regulations (RBC) (1 cr.)**

Explores codes, regulations and specifications governing construction of residential buildings. Students learn to locate and interpret technical information available in the Wisconsin Uniform Dwelling Code, county zoning regulations, local covenants and product literature. Following classroom review and discussion, students will be evaluated on their ability to comply with rules and regulations during actual building construction.

## **412 Combustion Engines**

### **10-412-101 Introduction to Diesel Technology (4 cr.)**

Introduces the student to the diesel shop environment, and emphasizes shop safety and general shop practices. The course prepares the student for success in the core diesel program classes.

### **10-412-112 Diesel Heavy Duty Brake Systems (3 cr.)**

Focuses on the air brake system component operation and maintenance for trucks and tractor/trailers. Students will learn to perform overhaul procedures for cam; wedge and disc air operated foundation brakes, as well as heavy-duty hydraulic brakes. It provides the opportunity for students to test and troubleshoot the entire air and hydraulic brake systems, including ABS systems found in trucks.

### **10-412-113 Diesel Steering and Suspension (2 cr.)**

Focuses on heavy-duty truck suspensions and steering systems. Students will learn about the operation, maintenance and overhaul of various types of heavy-duty suspensions. It provides technicians with the opportunity to perform total vehicle alignments. Testing and troubleshooting of power steering systems and steering complaints are also covered.

### **10-412-114 Diesel Preventive Maintenance (3 cr.)**

Focuses on the techniques for performing preventive maintenance and DOT criteria for performing annual inspections. Discussion includes the importance of vehicle maintenance and inspections. Students learn record-keeping requirements and earn an annual inspection certificate upon successful completion of the test at the conclusion of the class.

### **10-412-117 Diesel Hydraulic/Pneumatic Systems (2 cr.)**

Focuses on the basic hydraulic fundamentals and circuits found on heavy-duty trucks, tractors and heavy equipment. Includes hands-on testing, troubleshooting and repair of power steering circuits, pumps, cylinders and control valves. Basic air systems and controls are covered.

### **10-412-118 Drive Train (4 cr.)**

Focuses on the operation and maintenance of the power train. Students will learn the procedures for overhauling, adjusting and troubleshooting heavy-duty transmission, clutches and various final drives found on over-the-road trucks and tractors. Students will learn how to calculate the change driveline angles.

### **10-412-127 Tune-up & Diagnostic Testing (4 cr.)**

Focuses on key troubleshooting skills and methodology. Engine system testing procedures and tools are used to analyze symptom-based engine problems. Application of computer diagnostic tools is employed in actual live road testing situations. Engine dynamometer operation will also be part of this course.

### **10-412-128 Service Management (4 cr.)**

Focuses on business operations, shop liability and human relations issues in the diesel mechanics field. Students will be introduced to regulations for federal and state agencies such as OSHA, DILHR, DOT and the DNR.

### **10-412-131 Introduction to Light Duty Diesel Engines (2 cr.)**

Introduces students to diesel engine operation fundamentals. Air intake, exhaust, fuel systems and emission standards will be covered. Covers maintenance, tune-ups, including fuel pump and injector replacement. Students will learn to troubleshoot drivability and fuel economy complaints.

### **10-412-132 Diesel Heavy Duty Fuel Systems (3 cr.)**

Focuses on modern fuel subsystems' design and functionality. Lab demonstrations cover testing of the heavy duty fuel systems and troubleshooting, with a strong emphasis on component identification, inspection and adjustment.

### **10-412-133 Diesel Engine Rebuilding (3 cr.)**

Provides students with the opportunity to disassemble, identify each part of a modern diesel engine, measure all wear points and make reuse recommendations. Students will also reassemble an electronic controlled diesel engine. Component analysis, function and operation theories of the diesel engine are lecture topics studied.

**10-412-134 Diesel Electronic Fuel Management Systems (3 cr.)**

Focuses on electronic computer controlled engine management system function, component identification and computer based diagnostic tool operation. Lab demonstrations cover component identification, function and testing of the engine management systems. The course also introduces the student to proper operation and use of electronic testing with the use of a digital volt ohm meter.

**10-412-135 Diesel Heating Ventilation & Air Conditioning (3 cr.)**

Provides students with information and skills required to service commercial vehicle heating, ventilation and air conditioning systems. Students practice proper procedures for handling R12/R134A Freon and for servicing HFC 134A systems. Students will receive Wisconsin AG-135 certification.

**10-412-136 Diesel Heavy Duty Electrical 1 (3 cr.)**

Focuses on the fundamentals of electricity, batteries starting circuits, charging circuits, and electrical circuits found on trucks and tractors. Students will learn testing and troubleshooting procedures for various systems presently used in the industry, as well as how to perform repairs.

**10-412-137 Diesel Heavy Duty Electrical 2 (2 cr.)**

Focuses on troubleshooting and diagnostics of electrical systems used on heavy duty vehicles. Students will diagnose and repair electronic engines, transmissions and ABS systems. Wiring schematic reading and wiring harness repair will be covered.

**10-412-141 FABTECH Air Conditioning (2 cr.)**

Provides students with the knowledge and skills to service and repair heating and air conditioning systems. Hands-on activities include charging, discharging and leak detection. Students will receive federal and state AG-136 certification. This course is part of a training program called FABTECH, which is developed specifically for FABCO, and participants are subject to screening by FABCO, the sponsoring company.

**10-412-142 FABTECH Preventive Maint & Equipment Repair (5 cr.)**

Focuses on the inspection and lubrication of a variety of equipment. Students will collect oil samples and complete general repairs and adjustments to a variety of small construction equipment. This course is part of a training program called FABTECH, which is developed specifically for FABCO, and participants are subject to screening by FABCO, the sponsoring company.

**10-412-143 FABTECH Shop Practices, Introduction to (4 cr.)**

Focuses on the safe and proper operation of hand tools and shop equipment. Students learn the proper lifting and blocking procedures for a variety of equipment, including OSHA regulations. Students will learn basic first aid and become familiar with shop computer operation. This course is part of a training program called FABTECH, which is developed specifically for FABCO, and participants are subject to screening by FABCO, the sponsoring company.

**10-412-148 FABTECH Engine Rebuilding (5 cr.)**

Teaches students to disassemble, identify each part, measure all wear points and make reuse recommendations, analyze failed components, and reassemble two electronic controlled diesel engines. Component analysis, function and operation theories of the diesel engine are lecture topics studied.

**10-412-150 FABTECH Engine Testing & Diagnostics (5 cr.)**

Focuses on key troubleshooting skills and methodology. Engine system testing procedures and tools are used to analyze symptom-based engine problems. Application of computer diagnostic tools is employed in actual live road testing situations. Engine dynamometer operation will also be part of this course.

**10-412-151 FABTECH Electrical 1 (5 cr.)**

Introduces the student to basic electrical and electronic fundamentals needed by a technician to properly diagnose and repair complex electrical and electronic systems installed in Caterpillar and various FABCO rental service machines. This course is part of a training program called FABTECH, which is developed specifically for FABCO, and participants are subject to screening by FABCO, the sponsoring company.

**10-412-157 FABTECH Fuel Systems 2 (4 cr.)**

Enhances the ability to understand advanced fuel systems to properly diagnose, tune-up, repair and replace components in complex fuel systems installed in Caterpillar engines.

**10-412-164 FABTECH Hydraulic Systems 1 (3 cr.)**

Focuses on basic hydraulic principles and systems. Hands-on activities include replacing hoses, cylinders and performing minor maintenance. This course is part of a training program called FABTECH, which is developed specifically for FABCO, and participants are subject to screening by FABCO, the sponsoring company.

**10-412-172 FABTECH Fuel Systems 1 (3 cr.)**

Introduces the student to the various fuel systems fundamentals needed by a technician to properly diagnose and repair complex fuel systems installed in Caterpillar and various FABCO rental service machines.

# Course Descriptions

## 413 Electricity

### **31-413-311 Construction Trades Safety (1 cr.)**

Students learn skills to recognize, evaluate and control construction site hazards. Includes personal protective equipment and how to perform construction tasks safely. Describes hazards of electrical work and basic approaches to working safely. Introduces OSHA-mandated Lockout/Tagout procedures and prepares learners for additional detailed safety training. Upon successful completion, the student will receive a Department of Labor OSHA Construction Safety and Health 10-hour completion card.

### **31-413-312 Tools and Test Equipment (1 cr.)**

Focuses on the proper selection, inspection, use and maintenance of common hand tools, power tools and test equipment used by the electrical trades. Students will practice using many of the instruments while learning appropriate use procedures, maintenance instructions and safety rules.

### **31-413-313 Electrical Principles-DC (3 cr.)**

Introduces basic electrical theory and concepts used with direct current (DC) circuits with a practical approach to construction and maintenance applications. Topics include atomic and electron theory, voltage, current, resistance, power, Ohm's law, Kirchhoff's law, series, parallel, and series-parallel circuits. Students reinforce theory and concepts by performing hands-on lab activities.

### **31-413-315 National Electrical Code 1 (1 cr.)**

Introduces uses and application of state and national electrical codes. Examines definitions, enforcement issues and the code-making cycle, and how occupancies affect the electrical installation process. Students practice finding information using an easy-to-follow procedure and become familiar with the types of information found within the code book.

### **31-413-317 Electric System Troubleshooting (1 cr.)**

Discusses the methods of troubleshooting residential, commercial and industrial electrical problems. General principles and examples are presented, along with safety considerations. Step-by-step applications show how to troubleshoot electrical systems.

### **31-413-322 National Electrical Code 2 (1 cr.)**

Continues the examination of uses and applications of the state and national electrical code as they pertain to electrical installations. Learners will focus on the general requirements of electrical installations, conductor types and use, general wiring methods and techniques as they relate to residential, commercial and industrial applications.

### **31-413-325 National Electrical Code 3 (1 cr.)**

Continues the examination of uses and applications of state and national electrical code as they pertain to electrical installations. Learners will focus on the requirements of services, calculations, motors, transformers and special locations as they relate to residential, commercial and industrial applications.

### **31-413-326 Electrical Wiring Methods (3 cr.)**

Develops the basic skills needed for planning and installing electrical equipment. This course covers the electrical devices and wiring techniques that are common to residential, commercial and industrial applications through the use of typical construction plans, specifications layout and design. The appropriate safety and code requirements are stressed. In addition to classroom and lab work, students complete the trim-out stage of a residential building wiring project.

### **31-413-327 Equipment Installation (3 cr.)**

Introduces conduit bending and installation using hand-operated and step conduit benders. Learners are introduced to the types and applications of raceways, wireways, hardware and support systems used to mount boxes, receptacles and other electrical equipment. Installation safety and NEC requirements are stressed. In addition to classroom and lab work, students complete the rough-in stage of a residential building project.

### **31-413-331 Construction Trades Print Reading (2 cr.)**

Introduces the skills required for individuals to read and interpret various types of construction drawings. Students will learn the types of information and symbology they will find on electrical, plumbing, and construction drawings. Learners are introduced to the skills needed to read and interpret residential and commercial construction blueprints.

### **31-413-340 Electrical Principles-AC (2 cr.)**

Explores characteristics of alternating-current systems and application of Ohm's Law to AC circuits. Topics include sine wave, inductance, capacitance, reactance, impedance, power factor, and transformers. Learners analyze series, parallel, and combination circuits, and reinforce the theory and concepts about AC circuits by performing a succession of hands-on lab activities.

## **31-413-341 Motor & Controls Installation (3 cr.)**

Familiarizes the learner with diagrams and devices used to control motors. Circuit logic is examined with relays, timers, and sensors are used in applications. Through hands-on wiring activities, learners will become familiar with control circuits. Learners will use personal computers and software to construct electrical motor control diagrams. Introduces principles of DC and AC motor operation. The National Electrical Code requirements for motor installations are also covered.

## **31-413-342 Tools for a Successful Career (3 cr.)**

Is designed specifically for people choosing a career in Construction or Maintenance. Focuses on workplace productivity, teamwork, conflict management, communications, and critical thinking. Orientates the new student to the Tools for a Successful Career Program requirements and courses. Students are introduced to personal computers and their role in the electrical workplace. The learner will also explore the many facets of starting a career, employment trends, and what different job opportunities exist.

## **31-413-343 Industrial Wiring Methods (3 cr.)**

Covers topics specifically relating to the design and maintenance of commercial and industrial wiring systems. The main focus is on installing enclosures, conduit bodies, fittings and wiring, and the procedures required to work on them safely. The course is based on equipment relating to service entrances, low-voltage systems, conductors and cables, and system designs. A major portion of this course is to give students hands-on experience with industrial wiring.

## **419 Industrial Hydraulics-Pneumatics**

### **10-419-103 Fluid Power (3 cr.)**

Covers hydraulic and pneumatic control circuits. Basic hydraulics, hydraulic activators, accumulators, valves, pumps, motors, fluids and filters will be studied. Students also will learn about basic pneumatic principles, air compression, work devices, control devices and circuit diagrams. Closed loop proportional control is introduced in theory and lab.

## **420 Machine Tool Technology**

### **10-420-111 Metallurgy (2 cr.)**

Introduces ferrous and nonferrous metals. The properties and behaviors of these metals are considered in regard to their application. Participants test the microscopic structure of the metals with respect to their properties. Common heat-treating methods are used to change the properties of the metal.

### **10-420-120 Metallurgy-Mechanical Design (1 cr.)**

Presents basic information on ferrous and non-ferrous materials used in the design application. The composition of various material groups are studied, understanding why they are used for specific applications. Consideration will be given to metal properties, and their behavior in specific applications will be explored. The primary heat treatments of ferrous metals will be discussed regarding their use for improving the properties and capabilities of the metal. Terminology is emphasized throughout the course to understand the science and practical language of the subject.

### **10-420-145 Manufacturing Processes, Cold-Machining (2 cr.)**

Covers the basic machining processes used to cut, form and shape materials to desired forms, dimensions and surface finishes. This course examines metal-cutting machines, cutting tools and workholding devices including jigs and fixtures. Metal stamping and forming processes are also reviewed.

### **32-420-314 Manufacturing Techniques, Cold (1 cr.)**

Focuses on the manufacturing processes not necessarily done in a machine shop and covers techniques performed on materials in a cold state. Topics include cold-working metals, metal stamping and forming in presses, recent techniques in metalworking, and polishing and finishing of metal surfaces.

### **32-420-331 Measurement & Benchwork 1 (3 cr.)**

Builds a foundation for subsequent training in machining, industrial maintenance or other industrial areas requiring correct and accurate use of hand tools and precision measuring instruments in a safe manner. Prepares students for entry-level machine operator or maintenance machinist position in an industrial plant.

### **32-420-332 Measurement & Benchwork 2 (3 cr.)**

Continues to build a foundation for subsequent training in machining, industrial maintenance or other industrial areas requiring correct and accurate use of hand tools and precision measuring instruments in a safe manner. Prepares students for entry-level machine operator or maintenance machinist positions in an industrial plant.

### **32-420-333 Engine Lathe 1 (3 cr.)**

Introduces aspiring machinists or maintenance mechanics to the basic operations and safety practices associated with the engine lathe. Prepares students for entry-level machine operator or maintenance machinist positions in an industrial plant.

# Course Descriptions

## **32-420-334 Engine Lathe 2 (3 cr.)**

Continues to introduce aspiring machinists or maintenance mechanics to the basic operations and safety practices associated with the engine lathe. Prepares students for entry-level machine operator or maintenance machinist positions in an industrial plant.

## **32-420-335 Manual Milling Machines 1 (3 cr.)**

Introduces aspiring machinists or maintenance mechanics to the basic operations and safety practices associated with the manual milling machine. Prepares students for entry-level machine operator or maintenance machinist positions in an industrial plant.

## **32-420-336 Manual Milling Machines 2 (3 cr.)**

Continues to introduce aspiring machinists or maintenance mechanics to the basic operations and safety practices associated with the manual milling machine. Prepares students for entry-level machine operator or maintenance machinist positions in an industrial plant.

## **32-420-337 Manual Machine Tools, Adv. 1 (3 cr.)**

Introduces aspiring machinist or maintenance mechanics to advanced manual machining practices. Prepares students for entry-level machine operator or maintenance machinist positions in an industrial plant.

## **32-420-338 Manual Machine Tools, Adv. 2 (3 cr.)**

Continues to introduce aspiring machinists or maintenance mechanics to advanced manual machining practices. Prepares students for entry-level machine operator or maintenance machinist positions in an industrial plant.

## **32-420-339 Grinding Processes 1 (3 cr.)**

Introduces aspiring machinists or maintenance mechanics to precision grinding machines. Prepares students for entry-level machine operator or maintenance machinist positions in an industrial plant.

## **32-420-340 Grinding Processes 2 (3 cr.)**

Continues to introduce aspiring machinists or maintenance mechanics to precision grinding machines. Prepares students for entry-level machine operator or maintenance machinist positions in an industrial plant.

## **32-420-341 CNC M/G Code 1 (3 cr.)**

Upgrades the skills of established machinists. Prepares students to become a higher level machine operator or machinist in an industrial plant.

## **32-420-342 CNC M/G Code 2 (3 cr.)**

Continues to upgrade the skills of established machinists. Prepares students to become a higher level machine operator or machinist in an industrial plant.

## **32-420-343 CNC, Advanced 1 (3 cr.)**

Upgrades the skills of established machinists. Prepares students to become a higher level machine operator or machinist in an industrial plant.

## **32-420-344 CNC, Advanced 2 (3 cr.)**

Continues to upgrade the skills of established machinists. Prepares students to become a higher level machine operator or machinist in an industrial plant.

## **32-420-345 CAM Programming & Toolmaking 1 (3 cr.)**

Covers the basics of MasterCAM Mill and Lathe with the emphasis on producing Tool path. Tool making design and economics is also emphasized in this course.

## **32-420-346 CAM Programming & Toolmaking 2 (3 cr.)**

Continues to cover the basics of MasterCAM Mill and Lathe with the emphasis on producing Tool path. Tool making design and economics is also emphasized in this course.

## **32-420-350 Blueprint Reading, Basic-MTO (1 cr.)**

Focuses on the interpretation of machine drawings. Students study isometric and orthographic views on drawing and develop simple working drawings. Topics include dimensions, internal and external threads, holes, bores, fillets, radii, surfaces, planes, metric and geometric dimensioning and tolerancing.

## **32-420-351 Metallurgy, MTO (1 cr.)**

Introduces the science of metals and alloys. The crystalline structure and microstructure of metals and their effect on the properties of metals are studied. Prime consideration is given to heat treatment operations dealing with ferrous metals.

## **32-420-352 CAD/CAM-Machine Tool (2 cr.)**

Includes the fundamentals of drafting through the use of sketches on grid paper. In addition, the student will also be introduced to commands and CAD/CAM techniques using Mastercam. Mastercam is a CAD/CAM system that is used in industry.

## **32-420-353 Blueprint Reading, Adv-MTO (1 cr.)**

Covers advanced print reading including geometric dimensioning & tolerancing, welding, and assembly prints.



## 421 Mechanical Drafting

### **32-421-313 Drafting, Basic Mechanical, Machine Tool (2 cr.)**

Includes the fundamentals of drafting through the use of sketches on gridded paper. In addition, the student will also be introduced to commands and CAD/CAM techniques using Mastercam. Mastercam is a CAD/CAM system that is used in industry.

### **32-421-324 Blueprint Reading, Machine Tool Program (2 cr.)**

Focuses on the interpretation of machine drawings. Students study isometric and orthographic views on drawing and develop simple working drawings. Topics include dimensions, internal and external threads, holes, bores, fillets, radii, surfaces, planes, metric and geometric dimensioning and tolerancing.

## 422 Metallurgy

### **32-422-310 Metallurgy, Machine Tool/Iron/Steel Alloys (1 cr.)**

Introduces the science of metals and alloys. The crystalline structure and microstructure of metals and their effect on the properties of metals are studied. Prime consideration is given to heat treatment operations dealing with ferrous metals.

## 442 Welding

### **10-442-103 FABTECH Applied Welding (2 cr.)**

Acquaints students with the common welding techniques and procedures for arc and oxyacetylene welding in all positions. Topics include fusion welding, brazing, cutting, metal identification, selection of electrodes and American Welding Society symbols.

### **10-442-104 Welding for Technicians (1 cr.)**

Acquaints students with the common techniques and procedures for SMAW, GMAW and FCAW welding. Topics include welding metal from 3/16" to 3/4" thick, cutting metal with plasma and oxy-fuel, metal identification, selection of electrodes and American Welding Society symbols. Students will also develop skills in working with other people.

### **10-442-105 Welding, Applied-Diesel (3 cr.)**

Acquaints students with the common welding techniques and procedures for arc and oxyacetylene welding in all positions. Topics include fusion welding, brazing, cutting, metal identification, selection of electrodes and American Welding Society symbols. Students will also develop skills in working with other people.

### **32-442-301 Basic Welding for Machine Tool Operation (1 cr.)**

Focuses on basic concepts of torch operation, gas metal arc welding and gas tungsten arc welding processes. Students will learn welding theory as well as how to set up and operate these welding processes and complete lab work with proficiency.

### **32-442-317 Aircraft Applied Welding (1 cr.)**

Introduces the processes of GMAW on steel, GTAW on stainless and aluminum, and GTAW on thin wall tubular steel structure. Oxy-gas welding equipment safety techniques are examined. Inspection of weld samples is emphasized.

## 449 Industrial Safety

### **10-449-101 Safety Management (3 cr.)**

Provides an introduction to occupational health and safety management principles. Topics include a history into safety and health management, ethics, interpersonal dynamics, prevention, response, and promoting safety in the work place. This course reviews the role a safety and health coordinator has in today's workplace.

# Course Descriptions

## **10-449-102 Regulatory Compliance (3 cr.)**

Provides the student with an introduction of the federal and state standards that apply to safety and health. The focus will be on how to research and respond to regulatory standards. Using on-line and off-line resources, the student will respond to a series of selected questions about regulatory compliance.

## **10-449-103 Accident Investigation (3 cr.)**

Reviews the practices needed to conduct an effective and thorough accident investigation and prepare a comprehensive accident report. The student will learn to interview witnesses, prepare a site drawing, and gather appropriate visual evidence. In a simulated scenario, the student will prepare a comprehensive report on the incident.

## **10-449-118 OSHA Environmental Technology (2 cr.)**

Introduces the student to the concepts of safe aspects of Environmental Technology. Other topics include worker training, hazardous chemicals and waste, and the relationship between the Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA) Standards.

## **10-449-119 Ergonomics (3 cr.)**

Provides the student with an understanding of human engineering. The course will cover the methods to control repetitive motion injuries, office design, and the concept of ease and efficiency for industrial workers. Workstation design in the office and assembly line operations are a part of the class.

## **10-449-122 Introduction to the ISO 14000 Series (3 cr.)**

Provides the student with the fundamentals associated with the ISO process. The course will review the general expectations of the process in regards to Safety, Health and Environmental challenges.

## **10-449-132 Lean Safety (1 cr.)**

Focuses on improving safety by the use of Lean tools and techniques. The course covers ethical behavior, cultural change, and leadership and improvement methodologies, as well as the development of standards and metrics for measure and tracking overall safety.

## **10-449-134 Environmental Laws & Regulations in Industry (3 cr.)**

Provides an overview of regulatory agencies at the local, state and federal levels that apply in an industrial setting. Coursework includes interpreting and applying laws, regulations, inspection programs and potential fines. It also addresses the development of resources to aid in regulatory compliance.

## **10-449-153 Construction Safety Management (3 cr.)**

Provides students with an understanding of common construction methods, hazards, and preventive measures. Will provide a detailed understanding of the OSHA Construction Standards, including Excavations, Fall Protection, Scaffolds, Steel Erection, Demolition, and Cranes and Derricks, as well as common components of successful construction safety programs.

## **10-449-154 Industrial Hygiene (4 cr.)**

Instructs students on the art and science of anticipating, recognizing, evaluating, and controlling typical hazards within the work environment. This course will require a one-weekend on-campus requirement for hands on instruction of typical industrial hygiene equipment.

## **10-449-155 Fundamentals of Security Management (3 cr.)**

Provides learners with the information needed to develop, implement, and manage an industrial security program.

## **10-449-156 Industrial Environmental Management (3 cr.)**

Provides the learner with information necessary to manage an industrial environmental program. Course will cover common environmental laws with emphasis on managing specific permit requirements. An overview of ISO 14000 and other Environmental Management Systems will also be covered.

## **10-449-157 Emergency Response Operations (4 cr.)**

Provides instruction in typical emergency situations, including fire emergencies, medical emergencies, confined space emergencies, and hazardous materials emergencies. Course will cover hazards involved, regulatory requirements, and response options. The course will include a one-weekend on-campus requirement to provide hands-on experience with the various equipment and techniques discussed throughout the course.

## **10-449-158 Fleet Safety (3 cr.)**

Will provide learners with an understanding of the various requirements surrounding managing a fleet safety program, including DOT requirements, FMSCA requirements, and requirements surrounding the shipping of Hazardous Materials.

## **10-449-160 Hazardous Materials Emergency Response (4 cr.)**

Will prepare student to successfully respond and mitigate hazardous materials emergencies in the industrial environment, including HAZWOPER Technician and Incident Command training. Will require one weekend on-campus requirement.

## **10-449-161 Safety Program Management (4 cr.)**

Prepares students to manage safety programs in a general industry environment to meet compliance with applicable OSHA Standards and industry best practices to include training development, hazard assessment, and organizational risk management. Will require one weekend on-site requirement.

## **10-449-162 Fundamentals of Occupational Safety (3 cr.)**

Provides the learner with the fundamentals of occupational safety, including the business case for safety, common industrial hazards, hazard control, and common OSHA safety standards.

## **31-449-304 Powered Industrial Truck Operator Training (2 cr.)**

Introduces students to the skills needed to operate the most common powered industrial trucks (PIT) used on construction sites and OSHA standards. OSHA's Forklift Rule requires operators of powered industrial trucks to be trained in their safe operation. Learners will become proficient with the operation, inspection, precautions and maintenance of forklifts (rough terrain straight-mast and extended-reach), aerial work platforms (scissors lifts and boom lifts), skid steers and loaders. Training consists of classroom and hands-on instruction. This course, coupled with individual operator evaluation, meets OSHA standards and upon successful completion, the student will receive a Powered Industrial Truck Operator completion card.

## **455 Supervision-Management**

### **10-455-101 Site Layout and Construction (CMT) (2 cr.)**

Focuses on the materials, methods and equipment used in site construction. Topics include soil characteristics, survey practices, building layout, excavation and shoring, utility placement, engineered fill, and water management. Students learn to interpret codes, prints and specifications pertinent to site construction.

### **10-455-102 Introduction to Construction Management (CMT) (1 cr.)**

Serves as an introduction to the construction management profession and the Construction Management program at FVTC. Provides students with an overview of residential, commercial and industrial construction practice prior to student co-op experience.

### **10-455-103 Construction Safety Management (CMT) (2 cr.)**

Provides training in Occupational Safety and Health Administration (OSHA) standards. Teaches strategies for creating a successful safety management plan. Students receive their OSHA 10-hour Construction Safety card upon successful completion.

### **10-455-104 Construction Engineering Fundamentals (CMT) (3 cr.)**

Covers the principles of statics and strength of materials required to understand basic construction engineering and solve simple design problems. Design problems include wood, steel and reinforced concrete frames.

### **10-455-105 Foundation System (CMT) (2 cr.)**

Focuses on the materials, methods and equipment used in various foundation systems. Students will investigate various types of foundations used in buildings and other structures with an emphasis on concrete properties and principles. Students learn to interpret codes, prints and specifications pertinent to foundation construction.

### **10-455-106 Construction Estimating (CMT) (2 cr.)**

Teaches students the basics of construction estimating with an emphasis on quantity takeoff procedures for both detailed and conceptual estimates. Additional topics include types of estimates, types of contracts and evaluation of subcontractors. Students use Microsoft Excel software to prepare a detailed estimate from a set of working drawings.

### **10-455-107 Construction Management Internship (CMT) (2 cr.)**

Provides on-the-job learning for students to work within the management function of a residential, commercial, or industrial contractor, developer, or consultant. Students are responsible for securing their own employment--with assistance from the instructor. Students currently employed in the construction industry may receive credit for prior learning.

### **10-455-108 Construction Contracts and Law (CMT) (2 cr.)**

Explores the legal aspects of construction. Topics include types of contracts, contract procedures and documents, responsibilities of contractors and owners, reporting requirements, insurance, bonds, and change order management.

### **10-455-109 Construction Scheduling (CMT) (2 cr.)**

Teaches students to plan and schedule construction projects. Provides information on establishing schedule activities, durations and logic. Students will manually draw and calculate CPM (critical path method) schedules. Students are also introduced to computer-aided scheduling.

### **10-455-111 Structural Systems (CMT) (2 cr.)**

Focuses on the materials, methods and equipment used in the frame of a structure. Topics include structural systems built from wood, steel and reinforced concrete. Students learn to interpret codes, prints and specifications pertinent to structural systems.

# Course Descriptions

## **10-455-112 Exterior Enclosure Systems (CMT) (2 cr.)**

Focuses on the materials, methods and equipment used in building enclosures. Topics include masonry, precast, metals, glazing and EIFS (exterior insulation and finish systems). Emphasis is on proper detailing to avoid moisture penetration. Students learn to interpret codes, prints and specifications pertinent to building enclosures.

## **10-455-113 Construction Project Management (CMT) (2 cr.)**

Focuses on the day-to-day activities of managing a construction project emphasizing the importance of communication skills. Topics include progress meetings, submittals, field contract, RFI's (requests for information), change orders and project inspection.

## **10-455-115 Computer-Integrated-Construction (CMT) (2 cr.)**

Introduces students to use of database technologies as a construction management tool. Students prepare estimates, create schedules and perform project controls using leading construction software. In addition, students are exposed to Autodesk's REVIT software using building information modeling (B.I.M.) examples.

## **10-455-116 Sustainable Design and Construction (CMT) (2 cr.)**

Introduces construction management students to LEED's (Leadership in Energy and Environmental Design) Green Building Rating System. Information is presented on sustainable building practices which can be incorporated into project design, construction, operation and demolition.

## **10-455-118 Interior Building Finishes (CMT) (2 cr.)**

Focuses on the material, methods and equipment used to complete a building's interior. Topics include framed partitions and falsework, masonry partitions, ceiling systems, floor coverings, interior millwork and hardware. Students learn to interpret codes, prints and specifications pertinent to building interiors.

## **10-455-120 Revit Architecture (CMT) (2 cr.)**

Introduces students to principles of building information modeling through the utilization of Autodesk Revit Architecture. Basic entry level user skills and advanced modeling and documentation techniques will be mastered utilizing Autodesk Revit. Students will model commercial structures by creating a 3-D set of documents inclusive of plan, elevation, and section views including associated schedules and libraries.

## **10-455-121 Understanding Construction Drawings (CMT) (1 cr.)**

Introduces graphic communication methods used in construction. Basic sketching techniques are taught along with basic drafting procedures. Students will use their knowledge in architectural and engineering techniques to interpret construction drawings.

## **10-455-123 Construction Financial Management (CMT) (2 cr.)**

Introduces the principles of financial management used by construction companies including budget management and cash flow. Emphasis is on the construction manager's role in project profitability. Analyses of construction economic factors through cost, schedule and productivity management. Topics include project cash flow, billing, budget status reports, true profit and value engineering studies.

## **10-455-125 Construction Management Field Study (1 cr.)**

Provides the student an opportunity to pursue and study, in depth, a specific Construction Management function or practice to enhance personal interest or apply towards their base learning knowledge for enhancement and marketability in a specific construction field. Preparation, study and evaluation will be done in the form of research and presentation or in the form of a standardized professional certification and discussion.

## **10-455-126 Mechanical, Electrical & Plumbing Systems (CMT) (3 cr.)**

Focuses on the materials, methods and equipment used in mechanical, electrical and plumbing systems. Additional topics to include fire protection, communications and security systems. Students learn to interpret codes, prints and specifications pertinent to M.E.P. systems.

## **10-455-127 Construction Safety Management (CMT) (2 cr.)**

Provides training in Occupational Safety and Health Administration (OSHA) standards. Teaches strategies for creating a successful safety management plan. Students receive their OSHA 30-hr. Construction Safety card upon successful completion.

## **457 Metal Fabrication**

### **10-457-103 Manufacturing Processes, Hot-Welding (2 cr.)**

Introduces the hot-welding processes used in industry. Students examine the manufacturing of steel, heat treating, foundry work, casting, rolling, forging, extrusion and welding.

**10-457-131 Manufacturing Enterprises for Fabrication (3 cr.)**

Covers the methods and process involved in manufacturing production parts. The course is set up to operate like a production fabrication facility where the student fabricates a product based on customer's specification. Products that are developed must meet customer's quality expectations.

**10-457-141 Advanced Manufacturing Processes (2 cr.)**

Covers advanced fabricating methods and processes involved in manufacturing. The course is set up to operate like a production fabrication facility where the student researches, designs, and fabricates a product based on customer's specifications. Products that are developed must meet customer's quality expectations.

**10-457-151 Manufacturing Techniques 1 (2 cr.)**

Covers punching, shearing, sawing, drilling and cutting. Sub-assembly parts are produced using various types of equipment. The parts may be joined, by welding, to complete an assembly. Students work in a team environment to complete an assignment.

**10-457-152 Manufacturing Techniques 2 (2 cr.)**

Covers rolling, bending, and forming. Sub-assembly parts are produced using this equipment. The parts may be joined, by welding, to complete an assembly. Students are required to work in a team to complete an assignment. Where applicable, other joining processes are explored. It is recommended that the student have an ACCUPLACER Arithmetic score of 50 or greater or have completed GOAL Math or Math-Technical Basic (10-804-125) or Math Technical 1 (10-804-121) or College Technical Math 1A (10-804-113).

**10-457-153 Fabrication Techniques 1 (2 cr.)**

Allows students to fabricate a part from a blueprint and weld the assembly with a specified welding process. Cutting and forming may be required prior to assembly. Depending on the size and complexity of the project, students may be asked to work in a team to complete an assignment. It is recommended that students have completed or be enrolled in the following courses: Welding BPR & Symbols (10-621-133); Manufacturing Techniques 1 (10-457-151).

**10-457-154 Fabrication Techniques 2 (2 cr.)**

Allows students to fabricate and weld parts from a simple sketch that requires mathematical calculations. Cutting and forming may be required prior to assembly. Depending on the project, students may be asked to work in a team to complete an assignment. As time allows, students may also design and fabricate an individual project. It is recommended that students have completed or be enrolled in the following courses: Manufacturing Techniques 2 (10-457-152); Math-Technical Basic (10-804-125) or Math-Technical 1 (10-804-121).

**10-457-160 Manufacturing Processes (2 cr.)**

Covers punching, shearing, sawing, drilling, rolling, bending and forming. Sub-assembly parts are produced using various types of equipment. The parts may be joined, by welding, to complete an assembly. Students work in a team environment to complete an assignment. It is recommended that the student have an ACCUPLACER Arithmetic score of 65 or greater or successful completion of equivalent Program Prep course or College Technical Math 1A (10-804-113) or College Technical Math 1 (10-804-115).

**10-457-161 Cutting Processes (2 cr.)**

Covers laser cutting, abrasive water jet cutting, oxy-fuel cutting, plasma arc cutting and air-carbon arc cutting. Individual parts are produced using computerized and manual equipment. The parts may be joined, by welding, to complete an assembly. Students work in a team environment to complete an assignment.

**10-457-162 Pattern Drafting Processes (2 cr.)**

Covers the fundamentals of parallel line, radial line and triangulation. Both hand drawing pattern development with a computer and software pattern development are emphasized. Students transfer drawings to sheet metal and fabricate fittings. Fittings are joined by welding. When enrolling in this course, it is required that the student has taken or is concurrently taking Cutting Processes (10-457-161) and Welding BPR & Symbols (10-621-133).

**10-457-163 Manufacturing Enterprise (2 cr.)**

Covers the methods and process involved in manufacturing production parts. The course is set up to operate like a production fabrication facility where the student fabricates a product based on customer's specification. Products that are developed must meet customer's quality expectations. When enrolling in this course, it is required that the student has taken or is concurrently taking Fabrication Techniques 1 (10-457-153) and Manufacturing Processes (10-457-160).

# Course Descriptions

## 458 Truck Driving - Contracts

### 30-458-316 Truck Driving Semi-Level 1 (4 cr.)

This is the first of three courses in the Truck Driving technical diploma. This course prepares students for entry-level positions as commercial drivers and focuses on basic information about trucks and their operation. A DOT drug test will be required on the first day of class.

### 30-458-321 Truck Driving Semi-Level 2 (4 cr.)

This is the second of three courses in the Truck Driving technical diploma. This course focuses on obtaining the Commercial Driver's License while highlighting industry regulations, trip planning, hours of service, and driver safety.

### 30-458-322 Truck Driving Semi-Level 3 (4 cr.)

This is the third and final course in the Truck Driving technical diploma. This course focuses on honing the learned skills of each student, assuring the readiness for industry. Entry-level requirements, program certifications, advanced operations, and technical backing skills are the primary focus of this course.

### 30-458-323 Truck Driving Semi - 144 (4 cr.)

Focuses on retraining students that already have a CDL license. Students will learn how to safely operate Tractors and Trailers in compliance with all DOT driving regulations. Students will have the opportunity to drive on the highway, and perform backing exercises

### 30-458-340 CDL Straight Truck - 172 HR (5 cr.)

Prepares learners to obtain a Class B commercial driver's license that enables them to operate such vehicles as delivery trucks, garbage trucks, buses, dump trucks and petroleum trucks. This course focuses on pre-trip vehicle inspections, defensive driving habits, gear shifting, backing skills, industry regulations and safe maneuvering skills.

## 461 Small Engine & Chassis Mechanic

### 10-461-101 Outdoor Power Equipment, Introduction to (2 cr.)

Introduces students to program outcomes and requirements and reviews student handbook and program expectations.

### 10-461-104 Turf/Grass Equipment (3 cr.)

Focuses on the sharpening of reels and bed knives, setting up and adjusting reel cutting units, and the operation of tee, greens, fairway and rough mowers. This course meets at Winagamie Golf Course and uses the course shop facilities and grounds to train students on all operations of a golf course grounds.

### 10-461-105 Compact Equipment Hydraulics (3 cr.)

Provides the knowledge and skills needed to diagnose and repair hydraulic components used in equipment such as skid loaders and compact tractors.

### 10-461-106 Parts and Service Management (2 cr.)

Utilizes computer software programs, such as PartSmart, and web-based programs to learn how to look up parts and create parts' invoices. Includes methods of merchandizing products for increased sales, utilizing the computer software program, DealerWin, to develop service orders, invoice repair orders, and develop a customer data base.

### 10-461-107 OPE Fuel Management Systems (2 cr.)

Managing fuel use in engines can be accomplished with different systems. Students will use manufacturer specific software applications to monitor engine functions and diagnose performance complaints. The course materials will focus on Briggs & Stratton, Kohler and Stihl electronic fuel injection(EFI) systems.

### 10-461-112 Four Stroke Small Engines (3 cr.)

Gives an in-depth overview of engine design and operational theory. Parts identification, function and repair are incorporated into the disassembly, reconditioning and assembly of small air-cooled engines. Safety glasses are required.

### 10-461-113 OPE Drivelines and Chassis (3 cr.)

Focuses on the equipment used in groundskeeping, landscaping and maintenance of turf grass. Belt, gear, and hydrostatic transaxles and drivelines for lawn mowers, tillers, snowblowers, garden tractors, zero-turn mowers and compact tractors are included in this course. Safety glasses are required.

### 10-461-114 OPE Operation & Maintenance (2 cr.)

Focuses on maintaining and operating skid steer loads, forklifts, till-handlers, turf mowing equipment and landscape equipment. The course provides operators' certification. Safety glasses are required.

### 10-461-115 OPE Handheld Power Units (3 cr.)

Emphasizes the repair of two-cycle and small four-cycle engines used on chainsaws, cutoff saws, line trimmers, backpack blowers, hedge trimmers and other small power units. Students will learn new emission requirements and understand the current laws on product liability. Safety glasses are required.

## **10-461-116 OPE DC Electrical Systems (3 cr.)**

Covers Ohm's law and electrical theory, operation and troubleshooting methods for batteries, starting circuits, charging circuits and accessories. Safety glasses are required.

## **10-461-118 OPE Diesel Engine Systems (3 cr.)**

Provides technicians with skills and knowledge of gas and diesel engine theory, fuel, electrical, coding and lubrication systems.

## **10-461-122 OPE Customer Service & Sales (2 cr.)**

Focuses on the importance of the customer and develops customer service skills. Applies retail sales principles and emphasizes the importance of knowing the product's features, prospecting clients, presenting the product and closing the sale.

## **10-461-140 Intro to OPE and Power Sports Technician (3 cr.)**

Introduces students to program outcomes and requirements and reviews student handbook and program expectations.

## **10-461-141 Parts and Service Management (3 cr.)**

Utilizes computer software programs such as PartSmart and Web-based programs to learn how to look up parts and create parts invoices. Includes methods of merchandizing products for increased sales, and utilizes a computer software, DealerWin, to develop service orders, invoice repair orders and develop a customer data base.

## **10-461-142 Internship in OPE and Power Sports (3 cr.)**

Prepares students with job-seeking skills and provides students with actual on-the-job training with required outcomes. Gives students hands-on experience in real work places.

## **480 Renewable Energy-Foundations**

### **10-480-101 Renewable Energies, Overview (2 cr.)**

Provides an overview of renewable energy and introduces students to various applications involving solar (thermal and photovoltaic), hydroelectric, wind, geothermal, and energy from biomass-biofuels. Issues relevant to energy management applications are discussed, with an emphasis on energy conservation.

## **482 Renewable Energy-Electricity**

### **10-482-102 Photovoltaic Basics & Safety (1 cr.)**

Provides detail of photovoltaic (PV) system types, components, batteries, controllers, and inverters. Participants will learn how PV systems work and recognize the best application for each system type. This course is one of a series of three designed to prepare individuals to sit for the North American Board of Certified Energy Practitioners (NABCEP) Entry Level Certificate Program Exam.

### **10-482-103 Photovoltaics, Intermediate (1 cr.)**

Teaches participants design and installation methods, including system layout, sizing, wiring, and connections by assembling a small photovoltaic (PV) system. This course is second in a series of three designed to prepare individuals to sit for the North American Board of Certified Energy Practitioners (NABCEP) Entry Level Certificate Program Exam.

### **10-482-104 Photovoltaic Design & Installation (2 cr.)**

Teaches participants to apply National Electrical Code requirements, installation techniques, and safety practices by installing a photovoltaic system on a training roof or residential construction project. This course is third in a series of three designed to prepare individuals to sit for the North American Board of Certified Energy Practitioners (NABCEP) Entry Level Certificate Program Exam.

## **501 General Health**

### **10-501-101 Medical Terminology (3 cr.)**

Focuses on the component parts of medical terms: prefixes, suffixes and word roots. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

### **10-501-102 Health Insurance and Reimbursement (3 cr.)**

Introduces the learner to Federal, state, and private health insurance plans and managed care systems; and surveys the coding, submission and processing cycle of claims, as well as reimbursement methods used by payers. It provides application of information to ambulatory settings, pharmacies, hospitals, and long term care.

# Course Descriptions

## **10-501-106 Holistic Health for Health Care Providers (1 cr.)**

Introduces health care providers to the concept of holistic health practices. Analyzes holism and the holistic model for health care. Relates concepts to the health care provider as an instrument of healing. Explores the dialectic relationship of health-wellness-disease illness. Selected holistic modalities, therapies and healing arts will be explored.

## **10-501-107 Digital Literacy for Healthcare (2 cr.)**

Focuses on the use of technology in healthcare. Learners use common business software applications, including word processing, presentation, spreadsheet, and databases. Communication methods using technology are addressed. Learners gain experience with using the electronic health record (E.H.R.). Healthcare E.H.R. security issues, social media use, and digital healthcare resources are examined.

## **10-501-108 Pharmacology for Allied Health (2 cr.)**

Introduces students to classifying medications into correct drug categories and applying basic pharmacology principles. Students apply basic pharmacodynamics to identifying common medications, medication preparation, and administration of medications used by the major body systems.

## **10-501-109 Medical Law, Ethics & Profess (2 cr.)**

Prepares students to display professionalism and perform within ethical and legal boundaries in the health care setting. Students maintain confidentiality, examine legal aspects of the medical record, perform risk management procedures, and examine legal and bioethical issues.

## **10-501-116 Evaluation & Management Coding (3 cr.)**

Teaches the three components of evaluation and management coding: History, Physical Examination and Medical Decision Making and apply it to the various types of healthcare settings in which providers utilize these services. Auditing and compliance standards will also be explored and students will be able to evaluate documentation to validate accurate billing practices.

## **10-501-118 Advanced Medical Coding (3 cr.)**

Expands upon student's current ICD-10-CM diagnosis and CPT courses and delves further into HCPCS coding, as well as modifiers required for services rendered and how it relates to the actual claim form.

## **10-501-119 Revenue Cycle Management (3 cr.)**

Teaches the overall aspect of the revenue cycle from registration to claim processing and resolution of claim denials. Payer audits will also be discussed with a general understanding of how to handle audits from payers. Students will gain an understanding of how to communicate with payers.

## **10-501-150 Healing the Dying (1 cr.)**

Provides practical guidance in the care of the dying person for professional health and social care providers.

## **10-501-151 People Skills for Health Professionals (1 cr.)**

Explores professional/social interaction skills required for healthcare workers. Investigates values, ethical dilemmas, helping roles, assertiveness skills, communication with special populations, death/dying issues and stress management interventions. Participate in reflective self-study group discussions and service learning experiences. Develop a professional portfolio for future employment use.

## **10-501-153 Body Structure and Function (2 cr.)**

Introduces the basic normal anatomy and physiology of the human body essential for nursing practice. Medical terminology is introduced and plays a significant role in the course. Medical Terminology (10-501-101) is recommended but not required.

## **10-501-182 Human Diseases for Health Care Professions (3 cr.)**

Focuses on the common diseases of each body system as encountered in all types of health care settings by health information professionals. Emphasis is placed on understanding the etiology (cause), signs and symptoms, diagnostic tests, and treatment (including pharmacologic) of each disease.

## **10-501-190 Health Careers, Introduction to (1 cr.)**

Examines health-related careers. Educational preparation, job responsibilities and appropriate personal attributes will be surveyed in order to assist participants in career decision planning. Health career programs which Fox Valley Technical College offers will be highlighted.

## **503 Fire Technology**

### **10-503-130 Fire Protection Internship (2 cr.)**

Provides an opportunity for students to perform the duties of a municipal firefighter while serving the typical 24-hour shift, excluding FVTC class periods, at one of several fire departments. Fire department officers evaluate student performance. Department consent required.



**10-503-135 Firefighter Functional Fitness (1 cr.)**

Assess existing physical fitness abilities; improve upon the existing physical fitness level; and survey requirements for fire department physical agility testing as part of the hiring process.

**10-503-136 Certified Driver/Operator-Pumper (1 cr.)**

Provides instruction and opportunity to understanding and put into practice basic defensive driving techniques. This course meets the requirements of NFPA 1002, Standard for Fire Apparatus Driver/Operator Professional Qualifications, Driver/Operator – Pumper Job Performance Requirements (JPRs).

**10-503-142 Fire Fighting Principles (4 cr.)**

Describes basic fire behavior, techniques used to control structural and related fire emergencies, and life safety practices. Students perform all practical evolutions necessary to control and extinguish fires and otherwise meet all requirements for Firefighter I certification with the State of Wisconsin.

**10-503-143 Building Construction (3 cr.)**

Provides the components of building construction related to firefighter and life safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at emergencies.

**10-503-151 Fire Prevention (4 cr.)**

Provides fundamental knowledge relating to the field of fire prevention. Topics include: history and philosophy of fire prevention; organization and operation of a fire prevention bureau; use and application of codes and standards; plans review; fire inspections; fire and life safety education; and fire investigation.

**10-503-153 Hazardous Materials Awareness and Operations Level (1 cr.)**

Provides basic chemistry relating to the categories of hazardous materials including recognition, identification, reactivity, and health hazards encountered by emergency services.

**10-503-154 Hazardous Materials Chemistry (2 cr.)**

The hazardous materials technician shall be that person who responds to hazardous materials/WMD incidents using a risk-based response process by which he or she analyzes a problem involving hazardous materials/WMD, selects applicable decontamination procedures, and controls a release using specialized protective clothing and control equipment.

**10-503-156 Strategies, Tactics, and Incident Management Systems (4 cr.)**

Provides the principles of fire ground control through utilization of personnel, equipment, and extinguishing agents. Prepares students to pursue current national ICS training requirements.

**10-503-157 Fire Investigation (3 cr.)**

Provides learners with the fundamentals and technical knowledge needed for proper fire scene investigations.

**10-503-191 Principles of Emergency Services (2 cr.)**

Provides an overview of emergency services; career opportunities; culture and history; fire loss analysis; organization and function; fire departments as part of local government; laws and regulations; nomenclature; basic fire chemistry and physics; introduction to fire protection systems; introduction to fire strategy and tactics; life safety initiatives.

**10-503-192 Principles of Emergency Services Safety and Survival (3 cr.)**

Provides an introduction to the basic principles and history related to the national firefighter life safety initiatives, focusing on the need for cultural and behavior change throughout the emergency services.

**10-503-193 Fire Protection Systems (3 cr.)**

Provides information relating to the features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, water supply for fire protection and portable fire extinguishers.

**10-503-194 Fire Protection Hydraulics (3 cr.)**

Provides a foundation of theoretical knowledge in order to understand the principles of the use of water in fire protection and to apply hydraulic principles to analyze and to solve water supply problems.

**10-503-195 Fire Behavior and Combustion (3 cr.)**

Explores the theories and fundamentals of how and why fires start, spread, and are controlled.

**504 Criminal Justice - Contracts****10-504-102 Crime Prevention Surveys (2 cr.)**

Conduct basic crime prevention surveys on smaller businesses to identify security-related vulnerabilities and recommended solutions. Students will learn the mechanics of completing a survey form and use the form for their surveys. Students will be required to identify 2-3 cooperating business entities to complete the requisite survey work.

# Course Descriptions

## **10-504-104 Business Crime Prevention (3 cr.)**

Addresses security problems that affect commercial business. This course deals with specific problems such as burglary, robbery, shoplifting, check fraud, credit card fraud, safe selection, counterfeiting, and burglar resistant glazing materials.

## **10-504-106 Principles of Emergency Management (3 cr.)**

Introduces the student to the principles, theories, and practices of emergency management. The philosophy of comprehensive Emergency Management will be discussed including mitigation, preparedness, response and recovery. In addition, students will obtain ICS-100 and FEMA IS-700 certification.

## **10-504-107 Security Survey Applications (3 cr.)**

Designed to examine the security and risk management applications of a business entity and how they interrelate. Students will be exposed to the analysis of risk and the principles of security surveys, emergency management, business continuity, and concluding with the planning and management of physical security installations.

## **10-504-108 Physical Security Applications (3 cr.)**

Studies the applications of all forms of physical security equipment used in the security profession. Areas of concentration include security lighting, barriers, security design, locks, entry control, cargo security, guard forces and the integration of these forms.

## **10-504-109 Electronic Security Applications (3 cr.)**

Studies the applications of all forms of electronic equipment used in the security profession. Areas of concentration include interior and exterior intrusion sensors, video, access control, contamination sensors, personnel screening devices, voice and data communications, and the integration of such equipment.

## **10-504-110 Introduction to Forensic Science (3 cr.)**

Explores the applications of science in the field of crime scene management from the crime scene to the courtroom and beyond. Students will focus on the examination and reconstruction of various crime scenes with the emphasis on the identification, collection, documentation and preservation of physical evidence.

## **10-504-119 Internship - Criminal Justice Studies (2 cr.)**

Exposes the student to on-the-job situations and experiences in the criminal justice system. Placement locations include emergency dispatch centers, jails and courtrooms as well as in divisions that handle crime analysis and investigation, traffic accident investigation, community relations, water rescue and canine patrol.

## **10-504-119GB Internship - Criminal Justice Studies (2 cr.)**

Exposes the student to on-the-job situations and experiences in the criminal justice system. Placement locations include emergency dispatch centers, jails and courtrooms as well as in divisions that handle crime analysis and investigation, traffic accident investigation, community relations, water rescue and canine patrol.

## **10-504-122 Biological & Trace Evidence (3 cr.)**

Provides the student with the knowledge of protecting, recognizing, documenting, collecting, preserving and analysis of biological and trace evidence. Students will learn about the different types of biological evidence and trace evidence that can be used to assist in criminal investigations. This course deals with the real science and myths of DNA along with the identifying suitable types of evidence for DNA analysis. This course is offered on-campus in fall term and online in spring term.

## **10-504-123 Security Law (3 cr.)**

Examines the legal principles applicable to the security field. Included are the legal topics of negligence, intentional torts, agency and business liability for 3rd party acts. In addition, the student will learn about probable cause, arrest, search and seizure, and interrogation from a private security perspective.

## **10-504-124 Interview & Interrogation (3 cr.)**

Covers legal issues and a working knowledge of interview and interrogation techniques in agreement with current legal stipulations. Learn various forms of communications including verbal and nonverbal, as well as written statement analysis. Students will be instructed in appropriate interview techniques, the interviewing of victims and witnesses and interrogation techniques. Characteristics of the sociopath/psychopathic personality types will be examined. Students will also learn how to prepare for and testify in a court of law.

## **10-504-126 Criminal Deviant Behavior (3 cr.)**

Designed as a critical examination of the nature and extent of deviant behavior in our societies. Particular attention will be given to the causes and consequences of deviant behavior and to the social relations and processes associated with the more common forms of deviant and criminal expression within American society. In-depth study of sexual abuse of children by situational and preferential molesters. Case examples will be discussed.

**10-504-127 Investigation of Child Abuse (2 cr.)**

Examines, studies and researches the different types of child abuse that exist within our society. Pivotal to this course will be the multiple causes of child abuse and identifying the dynamics of child abuse, such as physical abuse, sexual abuse, child neglect, mental harm, child fatality, abducted children and Internet child exploitation. Major emphasis is on identifying the suspect or primary care provider and understanding the implementation of an effective protocol and multidisciplinary team approach that is the basis for an effective investigation of any child abuse case.

**10-504-128 Forensic Application Child Abuse Investigations (2 cr.)**

Explores the role of forensics and scientific crime scene investigation of child abuse cases. Emphasis is on identification and detection methods and the collection and gathering of evidence. This course also examines cybercrime and legal considerations facing law enforcement and cyber-security professionals in dealing with discovering, investigating and prosecuting cybercrimes within child abuse.

**10-504-131 Basic Crime Scene Photography (3 cr.)**

Designed to develop basic skills in preparing effective crime scene photographs and to instruct the student in the type of photographs necessary, as well as the lighting needed for good crime scene photography. This course will educate the crime scene investigator, homicide detective, sworn law enforcement officer, rape detective, arson investigator, domestic violence investigator, and other law enforcement personnel in the aspects of photography and provide the skills needed to apply this technology in the crime scene investigation field and/or related areas. This course is offered online in fall term and on-campus in spring term.

**10-504-132 Principles of Retail Security (3 cr.)**

Examines loss prevention issues related to retail business. Students will study the techniques used by shoplifters and employees to steal merchandise from a business and identify related recommendations for prevention. Further examination is made for losses related to vendors, shippers and accounting errors.

**10-504-133 Forensic Science Applications (3 cr.)**

Explores the applications of science in detecting crimes and in establishing proof in court. This course includes practical lab work. Students work on the following skills: identification, documentation, collection and preservation of physical evidence from the crime scene to the lab and the courtroom.

**10-504-142 Private Investigations, Introduction to (3 cr.)**

A study of investigations in the private and corporate sectors. Topics include investigative techniques relating to open record laws and searches, techniques of surveillance, employee screening, evidence collection, insurance fraud investigations, interviewing techniques, sources of information, and computer and other technology used in research. Applicable state statutes of attendees will be researched, and licensing requirements discussed.

**10-504-143 CPTED Applications (2 cr.)**

Examines the built environment in the study of Crime Prevention Through Environmental Design (CPTED). Students will learn how the physical design of buildings, parking lots, entry ways, streets and even subdivisions can affect the level of crime in the surrounding area. Students will examine their own environment for examples of CPTED, apply it to the proper principles, and identify corrective measures.

**10-504-145 Basic Security Alarm Installation (3 cr.)**

Learn how security systems detect intrusion and notify authorities. Labs reinforce device operation and proper system design.

**10-504-146 Impression Evidence (3 cr.)**

Focuses on the many different types of two/three dimensional impression evidence (footwear, fingerprints, tool marks, tire tread, etc.) found at crime scenes, detection/recovery techniques in the field and examinations in the lab and beyond to include the courtroom. Students will have practical hands-on applications (casting, lifts, etc.) with the collection techniques used in the field and lab environment. This will aid the student in developing tools and technologies to enhance their abilities to identify, document, collect and preserve impression evidence. This course is offered online in fall term and on-campus in spring term.

**10-504-147 Industrial Security (3 cr.)**

Provides an examination of security requirements and responsibilities of the security professional for the private sector employer/manufacturer. An in-depth study of employee access control, employee theft, staffing, risk management, internal and external controls, fire control systems, asset protection and work place violence are just a few areas that will be examined.

**10-504-148 Asset Protection, Principles of (3 cr.)**

Studies issues relating to workplace violence, sexual harassment, employee theft, computer security, consumer fraud, business disaster recovery, substance abuse, negligent hiring and other relevant issues.

# Course Descriptions

## **10-504-149 Law Enforcement Issues (2 cr.)**

Covers the latest developments in criminal justice employment. This course is designed to give prospective law enforcement officers a realistic view of related occupations. Topics include liability, affirmative action, organized unions, statutes relating to employment in various agencies, stress factors, agency policies, civil rights of employees, ethics, and automation and technology.

## **10-504-152 Terrorism and Emergency Planning (3 cr.)**

Provides the security professional with the necessary knowledge to give information, direction and guidance in the areas of threat identification, natural and man-made emergency operations planning, and counter-terrorism response.

## **10-504-159 Crash Scene Investigation (3 cr.)**

Teaches the importance of crash scene management as a crime scene management application. Students are exposed to response, recognition, documentation, collection and preservation of evidence techniques. Topics include reports, legal aspects, manual and laser measuring techniques, plotting methods, manual and computer-aided diagramming, evidence collection, approach speed, approach angle, crush evaluation, departure angle, drag factor, percent braking, post-collision speed, scrape, skid, test skids, etc.

## **10-504-168 Property/Evidence Management (2 cr.)**

Focuses on the applications of all forms of property and evidence management systems that include a number of key stages from the piece of property/evidence's acquisition to its eventual disposal. Students will learn versatile time saving tools for managing property, evidence, and equipment through warehousing and inventory control. Develop formal standards for the management, administration, handling of property/evidence and benchmark references specific to the initial property/evidence handling procedures and life time standards for an organization. This course is offered online in fall term and on-campus in spring term.

## **10-504-169 Forensic Science Internship (1 cr.)**

Exposes the student to on-the-job situations and experiences in the forensic science arena that is dedicated to the education, enrichment and development of emerging forensic scientists and future leaders of the field. This provides an avenue for new forensic technicians to interact with and become part of the established forensic science community through placement locations in private; state and federal crime labs; and with local, state and federal law enforcement and corrections agencies.

## **10-504-170 Correctional Administration (3 cr.)**

Teaches students the basics of the role of the administrator in a correctional facility. Topics include the role of the correctional supervisor, human resource management, strategic planning, policy development and inmate management.

## **10-504-171 Correctional Institutions (3 cr.)**

Teaches students about the history and present practice of the correctional institution. Topics include the development of prisons, the penal system, inmate profiles and special groups, as well as prison programs and services.

## **10-504-172 Correctional Sociology (3 cr.)**

Teaches students the sociology of the correctional institution's inmate population & staffing. Topics include the admission process, adjustment to confinement, formal and informal organizations, violence and suicide prevention and the supervision of special offenders. The course covers both adult and juvenile populations.

## **10-504-173 Corrections Law (3 cr.)**

Teaches students the laws and regulations affecting the correctional institution. Topics include understanding the Federal and State Court System, criminal and civil actions, sentencing and plea bargains, and prisoner rights and inmate litigation.

## **10-504-175 Correctional Security (3 cr.)**

Teaches students the basics of correctional security. Topics include inmate security control, inspections, movements, counts, privacy and safety, contraband, and equipment and building security. Personal protection, hostage negotiations and pad subduing techniques will also be discussed.

## **10-504-176 CCI: Computer Crime Investigation (2 cr.)**

Provides students with the skills, knowledge and ability to conduct computer crime investigations. Students will learn investigative protocols that can be applied to various types of computer crimes, focusing on the collection of evidence to initiate a criminal prosecution.

## **10-504-177 CCI: Computer Crime Law (3 cr.)**

Provides students with an understanding of the nature and application of laws related to computer crime. Students will learn and apply state and federal laws regarding criminal violations, the search and seizure of electronic evidence, and presenting computer crime evidence in court.

**10-504-178 CCI: Investigating Internet Crime (2 cr.)**

Provides students with an understanding of the nature of crimes being committed on the Internet and the skills necessary to successfully investigate Internet-related crime. Students will learn various investigative techniques, protocols and technical tools necessary to identify offenders and acquire evidence to build a prosecutable case.

**10-504-179 CCI: Basic Data Recovery (2 cr.)**

Provides students with a basic understanding of how forensic evidence is recovered from a computer or similar device. Students will learn the necessary steps involved in preserving, authenticating, and analyzing data stored on computing devices, while maintaining the integrity of evidence found on these devices.

**10-504-180 Forensic Science Capstone (3 cr.)**

Integrates all the individual skills students learned in previous classes to allow them to process a crime scene. Students will be expected to achieve a basic knowledge of how to record and document, collect, protect and defend the credibility of evidence.

**10-504-183 Advanced Security Alarm Installation (3 cr.)**

Design a stand-alone intrusion detection system and learn how to integrate CCTV and access control into an overall secure site plan.

**10-504-187 Homeland Security Management (3 cr.)**

Introduces students to the Department of Homeland Security at the federal, state and local level. The management application of responsibilities and resources of various homeland security components related private security and public safety will be studied using actual case analysis.

**10-504-190 Community Crime Prevention (1 cr.)**

Instructs subject areas that are frequently requested by neighborhood watch, service club and related community groups. Topics include consumer fraud, identity theft, sexual assault prevention, Internet safety, auto theft and travel safety.

**10-504-192 Crime Prevention Planning (3 cr.)**

Learn techniques to solve crime-related challenges in the community and create partnerships in crime prevention. Techniques for problem solving, engaging community members, building cohesiveness and dealing with diversity will be addressed.

**10-504-193 Introduction to Digital Video Evidence (3 cr.)**

Provides an in-depth analysis of how video works, including the uses and evidentiary value of digital video evidence. The latest freeware video analysis technologies will be explored in detail. Students will receive comprehensive information on freeware video imaging and analysis tools available for handling digital video evidence files from the field into the technician and analytical levels of analysis. Students will develop skills to recover reliable detail from their digital video evidence.

**10-504-194 Forensic Anthropology, Intro to (3 cr.)**

Provides the student with information regarding forensic anthropology as it applies to the science of physical anthropology and the legal process. Students will learn how forensic anthropologists apply standard scientific techniques developed in physical anthropology to identify human remains, and to assist in the detection of crime. Students will be exposed to how the forensic anthropologists assist in locating and recovering suspicious remains, establish if the bones are human, how to determine the sex, race, age, stature, weight, and any pathology of the newly acquired skeleton, determine manner and cause of death and, if homicide, identify the murderer.

**10-504-195 Forensic Entomology, Intro to (3 cr.)**

Provides the student with the applications and the study of insect and other arthropod biology to criminal matters. Defines how it is primarily associated with death investigations, how it can be used to detect drugs and poisons, determine the location of an incident, detect the length of a period of neglect in the elderly or children, and find the presence and time of the infliction of wounds. Students will be introduced to the structure and biology of insects and other similar creatures associated with entomology. Students will be led through standard death scene investigative procedures, the collection and field processing of entomological evidence, at the scene or at autopsy, and the lab processing and analysis of this evidence.

# Course Descriptions

## **10-504-196 Quality Assurance, Evidence (3 cr.)**

Provides an in depth analysis of the quality assurance goals of agencies involved in all aspects crime scene evidence management activities to include law enforcement agencies, laboratories and related others. Students will be exposed to developing, maintaining and monitoring policies and procedures developed to produce the best quality standards and controls to accomplish an atmosphere with the highest quality of work. The course emphasizes validation of scientific methods prior to implementation, and delivering quality and safe services in a cost effective manner and provide directions for making decisions for services without compromising quality and safety.

## **10-504-200 Criminal Justice Issues Capstone (2 cr.)**

Covers the latest developments in criminal justice employment. This course is designed to give prospective law enforcement officers a realistic view of related occupations. Topics include liability, affirmative action, organized unions, statutes relating to employment in various agencies, stress factors, agency policies, civil rights of employees, ethics, and automation and technology.

## **10-504-201 Introduction to Corrections (3 cr.)**

Examines the concept of punishment and its form, functions, and enforcement throughout history, with an emphasis on the operation, structure, clientele, and issues confronting the institutions, agencies, and programs encompassing the corrections system including jails, prisons, and probation and parole.

## **10-504-202 Criminal Justice Ethics (1 cr.)**

Course provides a basic understanding of the theoretical foundations of ethical thoughts. Diverse ethical perspectives will be used to analyze and compare relevant issues in law enforcement. Student will critically evaluate individual, social and/or professional standards of behavior within society/law enforcement and also apply a systematic decision-making process to these situations.

## **10-504-203 Crime Prevention Principles (3 cr.)**

This course explores ways to protect personal items. In this course students will understand the different types of glazing materials, environmental design, principles of lighting, how to conduct a building survey, hold community meetings and continue to educate the public.

## **10-504-204 Criminal Justice System (3 cr.)**

Distinguish the roles of courts and law enforcement agencies; identify the purpose of law enforcement in American society; describe how professionalism and ethics relate to law enforcement; understand crime in America; explain basic aspects of criminal law; gain an understanding of sentencing of offenders as it relates to prison and jails; compare adult and juvenile justice.

## **10-504-205 Writing Reports (3 cr.)**

Explain the context of report writing, take effective field notes, organize information in reports, write narratives, describe what information should be included in certain types of reports, prepare for court, describe how to be an effective witness, and testify as a witness in court.

## **10-504-206 Employment Strategies (3 cr.)**

Designed for students seeking employment in such public or private emergency services as law enforcement, firefighting, security and emergency medical services. This course requires practical application of classroom information pertaining to employment applications and interviews as well as physical fitness.

## **10-504-207 Communicating Professionally (3 cr.)**

Apply knowledge of the communication process, communication techniques, integrate verbal and physical intervention skills, develop strategies to obtain information in a variety of situations, differentiate between an interview and an interrogation, and analyze information for consideration as corroborative evidence.

## **10-504-208 Criminal Procedures (3 cr.)**

Identify basic concepts of criminal law; analyze facts, circumstances, and situations and determine which crimes against persons have been committed; analyze facts, circumstances, and situations and determine which crimes against property have been committed; and analyze facts, circumstances, and situations and determine which crimes involving drugs, alcohol or other criminal activity have been committed.

## **10-504-209 Juvenile Procedures (3 cr.)**

Describe the juvenile justice system; describe how juveniles in need of protection or services or delinquent are handled; identify constitutional law issues relevant to juveniles; analyze the role of law enforcement and other agencies in responding to and investigating child maltreatment; and recognize the unique investigative issues for missing children.

**10-504-210 Police Community Relations (3 cr.)**

Identify available community resources; explain the rewards and challenges of a diverse society; evaluate communication barriers with the public; respond to hate crimes; apply statutory requirements for emergency detentions and emergency protective placements of persons; apply crisis intervention principles and techniques; describe policing strategies; and apply principles of crime prevention.

**10-504-211 Constitutional Principles (3 cr.)**

Diagram the structure of the criminal justice system; identify when constitutional rules apply; identify the elements of a lawful arrest; identify the requirements for search warrants, and when warrantless searches are permitted; identify the requirements governing confessions and statements; and analyze the requirements for evidence to be admissible in court.

**10-504-213 Security Survey Techniques (3 cr.)**

Designing and examining security survey applications of business entities as well as residential areas, students will be exposed to the analysis of risk and the principles of security surveys, business continuity, and concluding with the planning and management of physical security installations.

**10-504-900 Introduction to Criminal Justice (3 cr.)**

Distinguish the roles of courts and law enforcement agencies; identify the role of law enforcement in American society; describe how professionalism and ethics relate to law enforcement; apply principles of critical thinking, decision-making, and problem solving; defend the importance of written agency policies; and distinguish between ministerial and discretionary duties.

**10-504-901 Constitutional Law (3 cr.)**

Diagram the structure of the criminal justice system; identify when constitutional rules apply; identify the elements of a lawful arrest; identify the requirements for search warrants, and when warrantless searches are permitted; identify the requirements governing confessions and statements; and analyze the requirements for evidence to be admissible in court.

**10-504-902 Criminal Law (3 cr.)**

Identify basic concepts of criminal law; analyze facts, circumstances, and situations and determine which crimes against persons have been committed; analyze facts, circumstances, and situations and determine which crimes against property have been committed; and analyze facts, circumstances, and situations and determine which crimes involving drugs, alcohol or other criminal activity have been committed.

**10-504-903 Professional Communications (3 cr.)**

Apply knowledge of the communication process, communication techniques, integrate verbal and physical intervention skills, develop strategies to obtain information in a variety of situations, differentiate between an interview and an interrogation, and analyze information for consideration as corroborative evidence.

**10-504-904 Juvenile Law (3 cr.)**

Describe the juvenile justice system; describe how juveniles in need of protection or services or delinquent are handled; identify constitutional law issues relevant to juveniles; analyze the role of law enforcement and other agencies in responding to and investigating child maltreatment; and recognize the unique investigative issues for missing children.

**10-504-905 Report Writing (3 cr.)**

Explain the context of report writing, take effective field notes, organize information in reports, write narratives, describe what information should be included in certain types of reports, prepare for court, describe how to be an effective witness, and testify as a witness in court.

**10-504-906 Criminal Investigation Theory (3 cr.)**

Describe the role of evidence in criminal investigations and prosecutions; locate and package evidence and document crime scenes; recognize the dynamics of victimization; apply appropriate interview techniques with adult or child victims; analyze the role of law enforcement in responding to domestic abuse; officer-involved domestic violence; and sexual abuse cases.

**10-504-907 Community Policing Strategies (3 cr.)**

Identify available community resources; explain the rewards and challenges of a diverse society; evaluate communication barriers with the public; respond to hate crimes; apply statutory requirements for emergency detentions and emergency protective placements of persons; apply crisis intervention principles and techniques; describe policing strategies; and apply principles of crime prevention.

**506 Lab Science Tech****10-506-101 Beginning Laboratory Science (3 cr.)**

Introduces the learner to beginning laboratory concepts and procedures. Emphasis will be on general laboratory safety, basic laboratory equipment utilization and calibration techniques. An introduction to scientific inquiry will be addressed. Proper techniques in documentation as it relates to quality control in verification of a quality system will be introduced. Concepts in data analysis will be reviewed as it relates to creation of a laboratory notebook.

# Course Descriptions

## **10-506-103 Advanced Laboratory Science (3 cr.)**

Gives the learner the opportunity to explore more complex laboratory procedures encountered in the environmental, medical, biotech, or forensic laboratory to include PCR, spectrophotometry and filtration as it relates to environmental microbiological and chemical analysis. The learner will conduct research, studies and experiments specific to their area of focus.

## **10-506-105 Environmental Lab Science Theory (2 cr.)**

This course is a companion to Environmental Lab Science Lab and provides a framework for understanding the interrelationship with our environment. The learner will explore the nature and process of science as it applies to environmental science. The learner will examine environmental public policy, biogeochemical cycles, community ecology, the hydrologic cycle, soil ecosystems, solid waste management and environmental health issues.

## **10-506-106 Environmental Lab Science Lab (1 cr.)**

Learner will begin to apply laboratory procedures and the scientific method to the analysis of samples and the performance of simple experiments. Lab techniques: BOD, calibration, dissolved oxygen, dissolved solids, water testing, pathogen testing.

## **10-506-112 Paper and Packaging Testing Procedures (2 cr.)**

Covers testing done in paper and packaging industries including basis weight, caliper, brightness, color, burst strength, tensile strength, stress, strain, modulus, elasticity/plasticity and poison behavior. Also introduces chemical testing, measurement techniques, data collection and safety procedures.

## **10-506-113 Instrumentation (2 cr.)**

Focuses on the principles, use and care of laboratory instruments. Students will learn how various instruments are used to measure physical and chemical properties, and they will be introduced to calibration, maintenance and troubleshooting for various types of laboratory instruments.

## **10-506-121 Food Laboratory Science Theory (2 cr.)**

Introduces the learner to a broad range of topics in food science and technology. Topics covered will include careers in the food industry, food chemistry, functional properties of the major food components, processing methods, food biotechnology, food engineering, and food product development. An emphasis will be placed on food safety including food microbiology, food contamination, HACCP and toxicology.

## **10-506-125 Food Laboratory Science Lab (1 cr.)**

Perform experiments unique to food processing and food safety. Techniques currently used in the food industry to measure food characteristics or food properties will be done in the laboratory.

## **10-506-135 Lab Science Internship (3 cr.)**

Integrates previous classroom study with specific off campus occupational experiences at selected training sites. An organized plan of experiences built around occupational competencies are planned, supervised and evaluated by the instructor and cooperating business trainer. Instructor consent required.

## **508 Dental**

### **10-508-101 Dental Health Safety (1 cr.)**

Prepares dental auxiliary students to respond proactively to dental emergencies, control infection, prevent disease, adhere to OSHA Standards, and safely manage hazardous materials. Students also take patient vital signs and collect patient medical/dental histories. CPR certification is a prerequisite; students will be required to show proof of certification before beginning the course. This course is aligned to serve students in the Dental Hygienist and Dental Assistant programs.

### **10-508-102 Oral Anatomy, Embry, Histology (4 cr.)**

Prepares Dental Hygienist students to apply detailed knowledge about oral anatomy to planning, implementation, assessment and evaluation of patient care. Students identify distinguishing characteristics of normal and abnormal dental, head and neck anatomy and its relationship to tooth development, eruption and health.

### **10-508-103 Dental Radiography (2 cr.)**

Prepares students to operate x-ray units and expose bitewing, periapical, extra oral, and occlusal radiographs. Emphasis is placed on protection against x-ray hazards. Students process, mount, and evaluate radiographs for diagnostic value. In this course students demonstrate competency on a manikin. In addition, students expose bitewing radiographs on a peer, role-play patient. This course is aligned to serve students in the Dental Hygienist and Dental Assistant programs.

### **10-508-105 Dental Hygiene Process 1 (4 cr.)**

Introduces students to the basic technical/clinical skills required of practicing dental hygienists including use of basic dental equipment, examination of patients and procedures within the dental unit. Under direct supervision of an instructor, students integrate hands-on skills with entry-level critical thinking and problem-solving skills. Reinforces the application of dental safety skills.



**10-508-106 Dental Hygiene Process 2 (4 cr.)**

Builds on and expands the technical/clinical skills student began developing Dental Hygiene Process 1. Introduces the application of fluoride and desensitizing agents, whole mouth assessments, comprehensive periodontal examinations, application of sealants and patient classification. Students begin performing removal of supragingival stain, dental plaque, calcified accretions and deposits.

**10-508-107 Dental Hygiene Ethics & Professionalism (1 cr.)**

Helps student dental hygienists develop and apply high professional and ethical standards. Students apply the laws that govern the practice of dental hygiene to their work with patients, other members of a dental team and the community. Emphasis is placed on maintaining confidentiality and obtaining informed consent. Students enhance their ability to present a professional appearance.

**10-508-108 Periodontology (3 cr.)**

Prepares student to assess the periodontal health of patients, plan prevention and treatment of periodontal disease, and to evaluate the effectiveness of periodontal treatment plans. Emphasis is placed on the recognition of the signs and causes of periodontal disease and on selection of treatments modalities that minimize risk and restore periodontal health.

**10-508-109 Cariology (1 cr.)**

Focuses on the characteristics and contributing factors of dental decay. Dental Hygiene students help patients minimize caries risk by developing treatment plans, communicating methods to patients, and evaluating treatment results.

**10-508-110 Nutrition and Dental Health (2 cr.)**

Prepares student dental hygienists to counsel patients about diet and its impact on oral health. Students learn to distinguish between balanced and unbalanced diets and to construct diets that meet the needs of patients with compromised dental/oral health. Students also learn to counsel patients about the effect of eating disorders on dental health.

**10-508-111 General & Oral Pathology (3 cr.)**

Prepares the student to determine when to consult, treat or refer clients with various disease, infection or physiological conditions. Students learn to recognize the signs, causes, and implications of common pathological conditions including inflammatory responses, immune disorders, genetic disorders, developmental disorders of tissues and cysts, oral tissue trauma, and neoplasm of the oral cavity.

**10-508-112 Dental Hygiene Process 3 (5 cr.)**

This clinical course builds on and expands the technical/clinical skills student dental hygienists developed in Dental Hygiene Process 2. In consultation with the instructor, students apply independent problem-solving skills in the course of providing comprehensive care for calculus case type 1, 2 and 3 patients and perio case type 0, I, II and III patients. Dental Hygiene Process 3 also introduces root detoxification using hand and ultra-sonic instruments, manipulation of files, use of oral irrigators, selection of dental implant prophylaxis treatment options and administration of chemotherapeutic agents. Students also adapt care plans in order to accommodate patients with special needs.

**10-508-113 Dental Materials (2 cr.)**

Prepares students to handle and prepare dental materials such as liners, bases, cements, amalgam, resin restorative materials, gypsum products, and impression materials. They also learn to take alginate impressions on manikins and clean removable appliances. This course is aligned to serve students in the Dental Hygienist and Dental Assistant programs.

**10-508-114 Dental Pharmacology (2 cr.)**

Prepares student dental hygienists to select safe and effective patient pre-medication, local anesthetic, chemo therapeutic and anti-microbial agents within the scope of dental hygiene practice. Students learn to recognize potential pharmacological contraindications for specific patients and to take measures to avoid negative impact or alert other members of the dental team to possible negative impact.

**10-508-115 Community Dental Health (2 cr.)**

Prepares the Dental Hygienist student to play a proactive role in improving the dental health of community members of all ages. Students perform and interpret dental health research to determine community dental health needs. They also participate in the development, implementation and evaluation of a community dental health program.

**10-508-117 Dental Hygiene Process 4 (4 cr.)**

Builds on and expands the technical/clinical skills developed in Dental Hygiene Process 3. With feedback from the instructor, students manage all aspects of cases in the course of providing comprehensive care for calculus case type 0, 1, 2 and 3 patients and for perio case type 0, I, II and III patients.

# Course Descriptions

## **10-508-118 Dental Anxiety and Pain Management (2 cr.)**

This course prepares the student dental hygienist to work within the scope of dental hygiene practice to manage anxiety and pain for dental patients. Students learn to prepare and administer local anesthesia and nitrous oxide safely. The course also addresses the recommendation of alternative pain control measures.

## **10-508-119 Dental Hygiene National Board Review (2 cr.)**

Designed for Dental Hygienist graduates preparing for the Dental Hygiene National Board Examination. Students work independently and online, with access to material from fifteen courses which comprise the Dental Hygienist core curriculum. Usage is limited to school computer lab. Student must be a graduate or enrolled in the last semester of the Dental Hygienist program.

## **10-508-120 Dental Office Management (2 cr.)**

Prepares dental auxiliary students to manage telephones, appointments, recall systems and inventory. Students also develop the skills needed to process accounts receivable and payable, collections, and third-party reimbursements. This course is aligned to serve students in the Dental Hygienist and Dental Assistant programs.

## **10-508-130 Dental Hygiene, Transition into Practice (1 cr.)**

Prepares students for the written licensing and clinical practice examinations. It includes simulated, written and practical exams; an individualized study plan; stress/test anxiety management strategies; and dental hygiene licensing.

## **10-508-149 Success Strategies for Dental Hygienists (2 cr.)**

Provides students with the tools needed for success in the vital, realistic, and practical methods of critical thinking skills for dental hygienists. Decision making, problem solving, analysis of ideas, troubleshooting, creativity, setting goals and objectives are highlights of the course.

## **10-508-150 Dental Hygiene Independent Study (1 cr.)**

Enables the dental hygiene students to select a topic of their choice and, with instructor approval and guidance, conduct advanced study of the topic.

## **31-508-302 Dental Chairside (5 cr.)**

Prepares dental assistant students to chart oral cavity structures, dental pathology, and restorations and to assist a dentist with basic dental procedures including examinations, pain control, amalgam restoration, and cosmetic restoration. Students will also develop the ability to educate patients about preventive dentistry, brushing and flossing techniques, and dental procedures, using lay terminology. Throughout the course, students will apply decoding strategies to the correct use and interpretation of dental terminology.

## **31-508-304 Dental & General Anatomy (2 cr.)**

Prepares dental assistant students to apply fundamentals of general and dental anatomy to informed decision-making and to professional communication with colleagues and patients.

## **31-508-306 Dental Assistant Clinical (3 cr.)**

Emphasizes integration of core abilities and basic occupational skills. Students apply skills developed in Dental and General Anatomy, Dental Health Safety, Dental Chairside, Dental Materials, Dental Radiography and Dental Assistant Professionalism in a clinical setting with patients.

## **31-508-307 Dental Assistant Professional (1 cr.)**

Prepares students for professional success in a dental practice or another dental health care environment. Students develop professional appearance and image. More importantly, they learn to work within ethical guidelines and legal frameworks. In preparation for entering the work force, dental assistants customize or develop their portfolios and lay out an on-going professional development plan.

## **31-508-308 Dental Chairside Advanced (5 cr.)**

Prepares Dental Assistant students to adapt chairside skills to assisting with dental specialties as they are performed in general practice. Focuses on pediatric dentistry, orthodontics, oral maxillofacial surgery, endodontics, periodontics and prosthodontics. Students will also develop the ability to assist with sealants, perform coronal polishing, and apply topical fluoride and topical anesthetics.

## **31-508-309 Dental Laboratory Procedures (4 cr.)**

Prepares Dental Assistant students to produce alginate impressions and fabricate diagnostic models, oral appliances, temporary restorations and custom trays. Students also polish oral appliances.

**31-508-310 Dental Radiography - Advanced (1 cr.)**

Builds on principles and skills developed in Dental Radiography. Dental Assistant students expose full mouth series, extra-oral and specialized radiographs on adult and child patients. Emphasis is on protection against X-ray hazards. Students will also process, mount and evaluate radiographs for diagnostic value. In addition, they will use radiographs to explain dental health and treatment plans to patients.

**31-508-311 Dental Assistant Clinical-Adv (2 cr.)**

Emphasizes integration of core abilities and basic and advanced occupational skills. Dental assistant students apply skills developed in Dental Chairside-Advanced, Dental Lab Procedures, Dental Radiography-Advanced and Dental Office Management in a clinical setting with patients.

## 509 Medical Assistant

**10-509-102 Human Body in Health and Disease (3 cr.)**

Focuses on diseases that are frequently first diagnosed and treated in the medical office setting. Students learn to recognize human anatomy and the causes, signs, and symptoms of diseases of the major body systems as well as the diagnostic procedures, usual treatment, prognosis and prevention of common diseases.

**31-509-301 Medical Asst Admin Procedures (2 cr.)**

Introduces medical assistant students to office management, business administration, and the electronic medical record (EMR) in the medical office. Students learn to schedule appointments, perform filing, record keeping, telephone and reception duties, communicate effectively with patients and other medical office staff, and keep an inventory of supplies.

**31-509-303 Medical Asst Lab Procedures 1 (2 cr.)**

Introduces medical assistant students to laboratory procedures commonly performed by medical assistants in a medical office setting. Students perform CLIA waived routine laboratory procedures commonly performed in the ambulatory care setting. Students follow laboratory safety requirements and federal regulations while performing specimen collection and processing, microbiology and urinalysis testing.

**31-509-303C Medical Asst Lab Procedures 1 (2 cr.)**

Introduces medical assistant students to laboratory procedures commonly performed by medical assistants in a medical office setting. Students perform CLIA waived routine laboratory procedures commonly performed in the ambulatory care setting. Students follow laboratory safety requirements and federal regulations while performing specimen collection and processing, microbiology and urinalysis testing.

**31-509-303O Medical Asst Lab Procedures 1 (2 cr.)**

Introduces medical assistant students to laboratory procedures commonly performed by medical assistants in a medical office setting. Students perform CLIA waived routine laboratory procedures commonly performed in the ambulatory care setting. Students follow laboratory safety requirements and federal regulations while performing specimen collection and processing, microbiology and urinalysis testing.

**31-509-303W Medical Asst Lab Procedures 1 (2 cr.)**

Introduces medical assistant students to laboratory procedures commonly performed by medical assistants in a medical office setting. Students perform CLIA waived routine laboratory procedures commonly performed in the ambulatory care setting. Students follow laboratory safety requirements and federal regulations while performing specimen collection and processing, microbiology and urinalysis testing.

**31-509-304 Medical Asst Clin Procedures 1 (4 cr.)**

Introduces medical assistant students to clinical procedures performed in the medical office setting. Students perform basic examining room skills including screening, vital signs, patient history, minor surgery and patient preparation for routine and specialty exams in the ambulatory care setting.

**31-509-304C Medical Asst Clin Procedures 1 (4 cr.)**

Introduces medical assistant students to clinical procedures performed in the medical office setting. Students perform basic examining room skills including screening, vital signs, patient history, minor surgery and patient preparation for routine and specialty exams in the ambulatory care setting.

**31-509-304O Medical Asst Clin Procedures 1 (4 cr.)**

Introduces medical assistant students to clinical procedures performed in the medical office setting. Students perform basic examining room skills including screening, vital signs, patient history, minor surgery and patient preparation for routine and specialty exams in the ambulatory care setting.

**31-509-304W Medical Asst Clin Procedures 1 (4 cr.)**

Introduces medical assistant students to clinical procedures performed in the medical office setting. Students perform basic examining room skills including screening, vital signs, patient history, minor surgery and patient preparation for routine and specialty exams in the ambulatory care setting.

**31-509-305 Med Asst Lab Procedures 2 (2 cr.)**

Prepares students to perform laboratory procedures commonly performed by medical assistants in the ambulatory care setting under the supervision of a physician. Students perform phlebotomy, immunology, hematology and chemistry laboratory procedures.

# Course Descriptions

## **31-509-305C Med Asst Lab Procedures 2 (2 cr.)**

Prepares students to perform laboratory procedures commonly performed by medical assistants in the ambulatory care setting under the supervision of a physician. Students perform phlebotomy, immunology, hematology and chemistry laboratory procedures.

## **31-509-305O Med Asst Lab Procedures 2 (2 cr.)**

Prepares students to perform laboratory procedures commonly performed by medical assistants in the ambulatory care setting under the supervision of a physician. Students perform phlebotomy, immunology, hematology and chemistry laboratory procedures.

## **31-509-305W Med Asst Lab Procedures 2 (2 cr.)**

Prepares students to perform laboratory procedures commonly performed by medical assistants in the ambulatory care setting under the supervision of a physician. Students perform phlebotomy, immunology, hematology and chemistry laboratory procedures.

## **31-509-306 Med Asst Clin Procedures 2 (3 cr.)**

Prepares medical assistant students to perform patient care skills in the medical office setting. Students perform clinical procedures including administering medications, performing an electrocardiogram, assisting with respiratory testing, educating patients/community, assisting with emergency preparedness in an ambulatory care setting.

## **31-509-306C Med Asst Clin Procedures 2 (3 cr.)**

Prepares medical assistant students to perform patient care skills in the medical office setting. Students perform clinical procedures including administering medications, performing an electrocardiogram, assisting with respiratory testing, educating patients/community, assisting with emergency preparedness in an ambulatory care setting.

## **31-509-306O Med Asst Clin Procedures 2 (3 cr.)**

Prepares medical assistant students to perform patient care skills in the medical office setting. Students perform clinical procedures including administering medications, performing an electrocardiogram, assisting with respiratory testing, educating patients/community, assisting with emergency preparedness in an ambulatory care setting.

## **31-509-306W Med Asst Clin Procedures 2 (3 cr.)**

Prepares medical assistant students to perform patient care skills in the medical office setting. Students perform clinical procedures including administering medications, performing an electrocardiogram, assisting with respiratory testing, educating patients/community, assisting with emergency preparedness in an ambulatory care setting.

## **31-509-307 Med Office Insurance & Finance (2 cr.)**

Introduces medical assistant students to health insurance and finance in the medical office. Students perform bookkeeping procedures, apply managed care guidelines, and complete insurance claim forms. Students use medical coding and managed care terminology to perform insurance-related duties.

## **31-509-309 Medical Law, Ethics & Professionalism (2 cr.)**

Prepares students to display professionalism and perform within ethical and legal boundaries in the health care setting. Students maintain confidentiality, examine legal aspects of the medical record, perform risk management procedures, and examine legal and bioethical issues.

## **31-509-310 Medical Assistant Practicum (3 cr.)**

Requires medical assistant students to integrate and apply knowledge and skills from all previous medical assistant courses in actual ambulatory health care settings. Learners perform medical assistant administrative, clinical, and laboratory duties under the supervision of trained mentors to effectively transition to the role of a medical assistant. This is a supervised, unpaid, clinical experience. AAMA required Practicum - 160 minimum hours (AAMA minimum) up to 216 hours.

## **31-509-310C Medical Assistant Practicum (3 cr.)**

Requires medical assistant students to integrate and apply knowledge and skills from all previous medical assistant courses in actual ambulatory health care settings. Learners perform medical assistant administrative, clinical, and laboratory duties under the supervision of trained mentors to effectively transition to the role of a medical assistant. This is a supervised, unpaid, clinical experience. AAMA required Practicum - 160 minimum hours (AAMA minimum) up to 216 hours.

## **31-509-310O Medical Assistant Practicum (3 cr.)**

Requires medical assistant students to integrate and apply knowledge and skills from all previous medical assistant courses in actual ambulatory health care settings. Learners perform medical assistant administrative, clinical, and laboratory duties under the supervision of trained mentors to effectively transition to the role of a medical assistant. This is a supervised, unpaid, clinical experience. AAMA required Practicum - 160 minimum hours (AAMA minimum) up to 216 hours.

## **31-509-310W Medical Assistant Practicum (3 cr.)**

Requires medical assistant students to integrate and apply knowledge and skills from all previous medical assistant courses in actual ambulatory health care settings. Learners perform medical assistant administrative, clinical, and laboratory duties under the supervision of trained mentors to effectively transition to the role of a medical assistant. This is a supervised, unpaid, clinical experience. AAMA required Practicum - 160 minimum hours (AAMA minimum) up to 216 hours.

## **510 Personal Care Worker**

### **30-510-300 Communication and Infection Control for the Personal Care Worker (1 cr.)**

Provides an overview of the key concepts of being a Personal Care Worker, teamwork, and professionalism. Students will also examine all the different things they need to consider when going into a client's house to provide care. Participants explore a variety of topics such as communication, assisting with challenging behaviors, emergencies, family dynamics, and respecting differences. Focuses on understanding the concepts of infection prevention. The information will be utilized when providing personal care and housekeeping in the client's home. The key concepts of nutrition will also be explored in this class

### **30-510-302 Personal Care 1 (1 cr.)**

Focuses on mobility, body mechanics, transfers, assistive devices, bathing, personal hygiene, and grooming.

## **513 Laboratory Assistant**

### **10-513-100 Phlebotomy Essentials (4 cr.)**

Examines the collection of blood specimens for laboratory analysis, the phlebotomist's role in medical laboratories, medical terms, infection control and safety, basic anatomy/physiology, communication and professional behaviors. This course stresses demonstration and practice of laboratory skills.

### **10-513-101 Phlebotomy Clinical (2 cr.)**

Provides 108 hours of supervised, clinical phlebotomy experience and uses a variety of clinical settings including a hospital, clinic and blood center. Satisfactory completion of this course and Phlebotomy Essentials (10-513-100) qualifies the student to participate in national certification examinations for phlebotomy.

### **10-513-109 Blood Bank (4 cr.)**

Focuses on blood banking concepts and procedures including blood typing, compatibility testing, work ups for adverse reaction to transfusions, disease states and donor activities.

### **10-513-110 Basic Lab Skills (1 cr.)**

This course explores health career options and the fundamental principles and procedures performed in the clinical laboratory. You will utilize medical terminology and basic laboratory equipment. You will follow required safety and infection control procedures and perform simple laboratory tests.

### **10-513-111 Phlebotomy (2 cr.)**

This course provides opportunities for learners to perform routine venipuncture, routine capillary puncture and special collection procedures.

### **10-513-113 QA Lab Math (1 cr.)**

This course focuses on performing the mathematical calculations routinely used in laboratory settings. You will explore the concepts of quality control and quality assurance in the laboratory.

### **10-513-114 Urinalysis (2 cr.)**

This course prepares you to perform a complete urinalysis which includes physical, chemical and microscopic analysis. You will explore renal physiology and correlate urinalysis results with clinical conditions.

### **10-513-115 Basic Immunology Concepts (2 cr.)**

This course provides an overview of the immune system including laboratory testing methods for diagnosis of immune system disorders, viral and bacterial infections.

### **10-513-116 Clinical Chemistry (4 cr.)**

Introduces clinical chemistry techniques and procedures for routine analysis using photometric, potentiometric and separation techniques. Topics in this course include pathophysiology and methodologies for carbohydrate, lipids, proteins, renal function and blood gas analysis.

### **10-513-120 Basic Hematology (3 cr.)**

This course covers the theory and principles of blood cell production and function, and introduces you to basic practices and procedures in the hematology laboratory.

### **10-513-121 Coagulation (1 cr.)**

This course introduces the theory and principles of coagulation and explores mechanisms involved in coagulation disorders. Emphasis is placed upon laboratory techniques used to diagnose disease and monitor treatment.

### **10-513-130 Advanced Hematology (2 cr.)**

This course explores mechanisms involved in the development of hematological disorders. Emphasis is placed upon laboratory techniques used to diagnose disorders and monitor treatment.

# Course Descriptions

## **10-513-133 Clinical Microbiology (4 cr.)**

This course presents the clinical importance of infectious diseases with emphasis upon the appropriate collection, handling and identification of clinically relevant bacteria. Disease states, modes transmission and methods of prevention and control, including antibiotic susceptibility testing, will also be discussed.

## **10-513-140 Advanced Microbiology (2 cr.)**

This course provides an overview of acid fast organisms, fungi, parasites, and anaerobic bacteria. The organisms, their pathophysiology, epidemiology, the diseases and conditions that they cause, laboratory methods of handling, culturing and identification will be discussed.

## **10-513-151 Clinical Experience 1 (3 cr.)**

In this clinical you will practice the principles and procedures of laboratory medicine as an entry level Clinical Laboratory Technician in a clinical laboratory setting. You will learn to operate state of the art instruments and report results on Laboratory Information Systems.

## **10-513-152 Clinical Experience 2 (4 cr.)**

Provides continuing practice for the principles and procedures of laboratory medicine as an entry level Clinical Laboratory Technician in a clinical laboratory setting. You will learn to operate state of the art instruments and report results on Laboratory Information Systems.

## **10-513-155 Phlebotomy Clinical (3 cr.)**

This course prepares the learner for blood specimen collection and processing in a clinical setting. Students will meet requirements to take the national phlebotomy certification examinations.

## **10-513-170 Introduction to Molecular Diagnostics (2 cr.)**

Introduces the principles and application of molecular diagnostics in the clinical laboratory.

## **514 Occupational Therapy Assistant**

### **10-514-171 Introduction to Occupational Therapy (3 cr.)**

Provides an overview of history, philosophy, ethics and scope of occupational therapy practice. Examines legal responsibilities, professional resources and organization. Students practice basic skills related to therapeutic relationships and determine their own suitability to a career in occupational therapy.

### **10-514-172 Medical and Psychosocial Conditions (3 cr.)**

Introduces medical and psychosocial conditions as they relate to occupational therapy practice. Topics include etiology, symptomatology, treatment and contraindications.

### **10-514-173 Activity Analysis and Applications (2 cr.)**

Provides instruction in activity analysis with hands-on experience in activities across the lifespan. Students apply the teaching/learning process and adhere to safety regulations.

### **10-514-174 OT Performance Skills (4 cr.)**

Emphasis on the development of skills related to assessment and intervention in the areas of sensory, motor, cognition and communication.

### **10-514-175 Psychosocial Practice (3 cr.)**

Examines the role of the OT in the service delivery to individuals affected by mental health conditions. Provides opportunity for development of skills related to the assessment and interventions of psychosocial needs.

### **10-514-176 OT Theory and Practice (3 cr.)**

Examines the theoretical foundations that guide OT practice. Apply group dynamics and demonstrate leadership skills.

### **10-514-177 Assistive Technology and Adaptations (2 cr.)**

Explores technologies that support delivery of OT services. Emphasis on competency related to computer skills, ergonomics, adaptive devices and environments.

### **10-514-178 Geriatric Practice (3 cr.)**

Examines the role of the OT in the service delivery to elders in a variety of settings. Includes analysis of the impact of age-related changes and disease processes on the function of the elderly.

### **10-514-179 Community Practice (2 cr.)**

Explores practice options and interventions for occupation-based community practice. Students articulate the unique role of occupational therapy within the community.

### **10-514-182 Physical Rehabilitation Practice (3 cr.)**

Explores interventions relative to major physical disability diagnoses seen in OT practice. Evaluation, treatment interventions and documentation are emphasized relative to the biomechanical, neurodevelopmental and rehabilitative approaches to practice.

**10-514-183 Pediatric Practice (3 cr.)**

Explores interventions relative to major pediatric diagnoses seen in OT practice. Evaluation, treatment interventions and documentation are emphasized within the context of the child's occupations.

**10-514-184 OTA Fieldwork I (2 cr.)**

Integrate classroom theory and practice into a Fieldwork Level 1 experience. Provides experiences to assist in the development of communication, professional and observational skills.

**10-514-185 OTA Practice and Management (2 cr.)**

Provides opportunities to practice clinical management skills, continuous quality improvement measurement, and administrative concepts and procedures. Students create a professional development plan.

**10-514-186 OTA Fieldwork II A (5 cr.)**

Develop skills and behaviors necessary for entry-level occupational therapy assistant practice. Provides a different clinical practice setting than OTA Fieldwork II B.

**10-514-187 OTA Fieldwork II B (5 cr.)**

Develop skills and behaviors necessary for entry-level occupational therapy assistant practice. Provides a different clinical practice setting than OTA Fieldwork II A.

## 520 Social Services

**10-520-105 Personal/Professional Development (1 cr.)**

Introduces personal and professional characteristics and qualities expected of a person in the helping professions. Students clarify personal beliefs, values and principles and assess their strengths and weaknesses. They examine how the principles of interdependent cooperation impact them personally and professionally.

## 525 Neurodiagnostic Technologist

**10-525-101 Basic EEG (3 cr.)**

Designed to introduce the student to the field of EEG and its use in medicine and surgery. Emphasis will be placed on patient hook up, history taking, and careful handling of patients. Technical principles in actual operation of a laboratory will be introduced in the classroom and applied in the clinical area of EEG.

**10-525-102 Basic Neuroscience (2 cr.)**

Advanced neuronanatomy of the central nervous system. Identify the brainstem role in controlling the body functions and maintaining equilibrium. Includes functions of the musculoskeletal system. Analyze the nervous control of cardiac muscles including the autonomic nervous system.

**10-525-103 Neurodiagnostic Technology Clinical I (4 cr.)**

Perform clinical EEG's and EP's along with recognizing and understanding the test results displayed.

**10-525-104 Advanced EEG (4 cr.)**

Builds the students' knowledge of EEG findings in neurological diseases. Demonstrate long term epilepsy monitoring, assess meds and treatments for epilepsy, assess and analyze diffuse encephalopathies, organic brain syndromes, dementias and tumors. Assess EEG findings in the neonates.

**10-525-105 Evoked Potential Basics (2 cr.)**

Introduces the fundamentals of evoked potentials including sensory pathways, digital instrumentation, obligate wave forms and technical writing.

**10-525-106 Neurodiagnostic Technology Clinical 2 (4 cr.)**

Provides clinical experience in performing basic EEG and EP recordings.

**10-525-107 Neurodiagnostic Technology Theory (3 cr.)**

Introduces other electro-neurodiagnostic recordings used in neurological area. Emphasis will be placed on sleep disorders, long term epilepsy monitoring, EMG, NCV and IOM.

**10-525-108 Neurodiagnostic Technology Practicum I (4 cr.)**

Perform EEG's and EP's with minimal supervision. Perform supervised PSG's, IOM's, EMG's and LTEM's, all within the clinical setting.

**10-525-109 Clinical Correlates (3 cr.)**

Explores the clinical correlates for intraoperative monitoring, including indications for intraoperative neurophysiological changes intraoperative monitoring. Classify pharmacological agents according to their use in the surgical environment. Analyze the effects of anesthetic agents.

**10-525-110 Neurodiagnostic Technology Registry Review (1 cr.)**

Complete resumes, review interviewing techniques, and practice skills for employment along with a comprehensive review of theory pertaining to EEG's, EP's, IOM's, LTEM's and PSG's in preparation for the national exam.

# Course Descriptions

## **10-525-111 Neurodiagnostic Technology Practicum II (4 cr.)**

Emphasis will be placed on the techniques of recording quality IOM's, PSG's, LETM's, EMG/NCV, and EPS within clinical settings.

## **10-525-112 Neurodiagnostic Technology Practicum III (4 cr.)**

Perform EEG's, EP's, PSG's, IOM's, EMG/NCV, and LETM's with minimal supervision.

## **530 Health Information**

### **10-530-161 Health Quality Management (3 cr.)**

Explores the programs and processes used to manage and improve healthcare quality. Addresses regulatory requirements as related to performance measurement, assessment, and improvement, required monitoring activities, risk management and patient safety, utilization management, and medical staff credentialing. Emphasizes the use of critical thinking and data analysis skills in the management and reporting of data.

### **10-530-162 Foundations of HIM (3 cr.)**

Introduces learners to the healthcare delivery system, and the external forces that influence healthcare delivery. Sets an understanding for the expectations and standards related to professional ethics, confidentiality and security of health information. Differentiates the use and structure of healthcare data elements, data standards, and the relationships between them. Prepares learners to collect and maintain health data to ensure a complete and accurate health record.

### **10-530-163 Healthcare Stats and Analytics (3 cr.)**

Explores the management of medical data for statistical purposes focusing on descriptive and inferential statistics including definition, collection, calculation and compilation of numerical data. Examines data analytics, retrieval, presentation and research methodologies.

### **10-530-164 Intro to Health Informatics (3 cr.)**

Emphasizes the role of information technology in healthcare through an investigation of the electronic health record (EHR), business, and health information software applications. Learners will develop skills to assist in enterprise information management and database architecture design and implementation.

### **10-530-165 Intermediate Coding (3 cr.)**

Prepares students to assign ICD and CPT/HCPCS codes supported by medical documentation and official coding guidance to support appropriate reimbursement. Students will participate in CDI activities, including preparation of appropriate physician queries in accordance with compliance guidelines.

### **10-530-166 Health Information Technology Capstone (1 cr.)**

Explore technical skills and professional attributes desired for the HIM profession, and conduct activities to assess one's own readiness to enter the health information industry.

### **10-530-167 Management of HIM Resources (3 cr.)**

Examines the principles of management to include planning, organizing, human resource management, directing, and controlling as related to the health information department.

### **10-530-178 Healthcare Law & Ethics (2 cr.)**

Examines regulations for the content, use, confidentiality, disclosure and retention of health information. An overview of the legal system and ethical issues are addressed.

### **10-530-182 Human Disease for the Health Professions (3 cr.)**

Prepares learners to interpret clinical documentation that they will encounter in a variety of healthcare settings. Emphasis is placed on understanding the common disorders and diseases of each body system to include the etiology (cause), signs and symptoms, diagnostic tests and results, and medical treatments and surgical procedures.

### **10-530-184 CPT Coding (3 cr.)**

Prepares learners to assign CPT codes, supported by medical documentation, with entry level proficiency. Learners apply CPT instructional notations, conventions, rules, and official coding guidelines when assigning CPT codes to case studies and actual medical record documentation.

### **10-530-185 Healthcare Reimbursement (2 cr.)**

Prepares learners to compare and contrast health care payers, illustrate the reimbursement cycle, and to comply with regulations related to fraud and abuse. Learners assign payment classifications with entry level proficiency using computerized encoding and grouping software.

### **10-530-196 Professional Practice (3 cr.)**

Applies previously acquired skills and knowledge by means of clinical experiences in the technical procedures of health record systems and discussion of clinical situations. Student may participate in a supervised clinical experience in healthcare facilities.



**10-530-197 ICD Diagnosis Coding (3 cr.)**

Prepares students to assign ICD diagnosis codes supported by medical documentation. Students apply instructional notations, conventions, rules, and official coding guidelines when assigning ICD diagnosis codes to case studies and actual medical record documentation.

**10-530-198 Professional Practice 2 (3 cr.)**

Applies previously acquired skills and knowledge and discussion of clinical situations. Prepares for the certification examination and pre-graduation activities. This is the second of a two-semester sequence of supervised technical and managerial clinical experiences in health care facilities.

**10-530-199 ICD Procedure Coding (2 cr.)**

Prepares students to assign ICD procedure codes supported by medical documentation with entry level proficiency. Students apply instructional notations, conventions, rules, and official coding guidelines when assigning ICD procedure codes to case studies and actual medical record documentation.

## 531 Emergency Medical Service

**10-531-101 First Aid/CPR, Principles and Practices (1 cr.)**

Presents and evaluates basic first aid skills necessary to care for the ill and injured until medical help arrives. Covers the use of an Automated External Defibrillator (AED), as well as CPR for all ages and the recognition and care of cardiac emergencies. Students receive an AHA Healthcare CPR card and a FVTC First Aid certificate upon course completion.

**10-531-101A 1stAid/CPR-Principle&Practice-Culinary Arts (1 cr.)**

Presents and evaluates basic first aid skills necessary to care for the ill and injured until medical help arrives. Covers the use of an Automated External Defibrillator (AED), as well as CPR for all ages and the recognition and care of cardiac emergencies. Students receive an AHA Heartsaver CPR card and a FVTC First Aid certificate upon course completion.

**10-531-101B 1st Aid/CPR-Principle & Practice-Wood Tech (1 cr.)**

Presents and evaluates basic first aid skills necessary to care for the ill and injured until medical help arrives. Covers the use of an Automated External Defibrillator (AED), as well as CPR for all ages and the recognition and care of cardiac emergencies. Students receive an AHA Heartsaver CPR card and a FVTC First Aid certificate upon course completion.

**10-531-105 First Responder with Healthcare Provider CPR (2 cr.)**

Teaches and evaluates the knowledge/skills needed to respond to medical or trauma situations. It includes AED, Combitube, EpiPen, Spinal Immobilization, CPR and skills needed to assist the ambulance crew. This course meets Wisconsin and National licensure guidelines. Students receive an AHA Healthcare CPR card and FVTC Emergency Medical Responder certificate.

**10-531-168 Basic Electrocardiogram Interpretation (1 cr.)**

Provides learner with a general understanding of the heart and some of the dysrhythmias associated with cardiac problems. Explores topics as cardiac anatomy and physiology, electrophysiology of cardiac cells, an introduction to electrocardiograms, basic cardiac rhythms and dysrhythmias, treatment protocols and cardiac drugs. Provides a basic introduction for registered nurses, paramedics, respiratory therapists and other health professionals who will care for patients with dysrhythmias.

**10-531-169 Emergency Medical Technician - Basic (5 cr.)**

Presents and evaluates the knowledge and skills needed by ambulance personnel to respond to and treat cardiac arrest and critical medical and trauma situations. Extrication and ambulance operations are also covered. Department consent required. Must submit a copy of a signed BLS Healthcare Provider CPR card to the EMS Department office. The card must be valid for at least one year beyond either the end of class or the date of the expected National Registry Exam (whichever is later). Fox Valley Tech offers CPR classes under catalog #47531401.

**10-531-169A2 Emergency Medical Technician Basic Part A (2 cr.)**

Presents and evaluates the knowledge and skills needed by ambulance personnel to respond to and treat cardiac arrest and critical medical and trauma situations. Extrication and ambulance operations are also covered. Department consent required. Must submit a copy of a signed BLS Healthcare Provider CPR card to the EMS Department office. The card must be valid for at least one year beyond either the end of class or the date of the expected National Registry Exam (whichever is later). Fox Valley Tech offers CPR classes under catalog #47531401.

## Course Descriptions

### **10-531-169A3 Emergency Medical Technician Basic Part B (3 cr.)**

Presents and evaluates the knowledge and skills needed by ambulance personnel to respond to and treat cardiac arrest and critical medical and trauma situations. Extrication and ambulance operations are also covered. Department consent required.

### **10-531-911 EMS Fundamentals (2 cr.)**

Provides the paramedic student with comprehensive knowledge of EMS systems, safety, well-being, legal issues, and ethical issues, with the intended outcome of improving the health of EMS personnel, patients, and the community. The students will obtain fundamental knowledge of public health principles and epidemiology as related to public health emergencies, health promotion, and illness/injury prevention. Introducing students to comprehensive anatomical and medical terminology and abbreviations will foster the development of effective written and oral communications with colleagues and other health care professionals.

### **10-531-912 Paramedic Medical Principles (4 cr.)**

Addresses the complex depth of anatomy, physiology, and pathophysiology of major human systems while also introducing the paramedic students to the topics of shock, immunology, and bleeding.

### **10-531-913 Advanced Patient Assessment Principles (3 cr.)**

Teaches the paramedic student to integrate scene and patient assessment findings with knowledge of epidemiology and pathophysiology to form a field impression. By utilizing a structured and organized assessment process with knowledge of anatomy, physiology, pathophysiology, life span development, and changes that occur to the human body with time, the students will learn to develop a list of differential diagnoses through clinical reasoning, along with the ability to modify the assessment as necessary to formulate a treatment plan for their patients.

### **10-531-914 Advanced Pre-Hospital Pharmacology (3 cr.)**

Provides the paramedic student with the comprehensive knowledge of pharmacology required to formulate and administer a pharmacological treatment plan intended to mitigate emergencies and improve the overall health of the patient.

### **10-531-915 Paramedic Respiratory Management (2 cr.)**

Teaches the paramedic student to integrate complex knowledge of anatomy, physiology, and pathophysiology into the assessment to develop and implement a treatment plan with the goal of assuring a patent airway, adequate mechanical ventilation, and respiration for patients of all ages. Specific knowledge pertaining to the respiratory system is also provided to ensure the student is prepared to formulate a field impression and implement a comprehensive treatment plan for a patient with a respiratory complaint.

### **10-531-916 Paramedic Cardiology (4 cr.)**

Teaches the paramedic student to integrate assessment findings with principles of cardiovascular anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for a patient with a cardiovascular complaint.

### **10-531-917 Paramedic Clinical/Field 1 (3 cr.)**

Provides the student with the opportunity to enhance his or her learning through the practice of paramedicine in field and health care environment experiences with actual patients under the supervision of approved preceptors. Students may also have the opportunity to participate in formal high-fidelity human patient simulator experiences as a part of this course.

### **10-531-918 Advanced Emergency Resuscitation (1 cr.)**

Prepares the paramedic student in the integration of comprehensive knowledge of causes and pathophysiology into the management of shock, respiratory failure, respiratory arrest, cardiac arrest, and peri-arrest states with an emphasis on early intervention to prevent respiratory and/or cardiac arrest if possible.

### **10-531-919 Paramedic Medical Emergencies (4 cr.)**

Teaches the paramedic student to integrate assessment findings with principles of anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for a patient with a medical complaint.

### **10-531-920 Paramedic Trauma (3 cr.)**

Teaches the paramedic student to integrate assessment findings with principles of anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for an acutely injured patient.

**10-531-921 Special Patient Populations (3 cr.)**

Teaches the paramedic student to integrate assessment findings with principles of anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for patients with special needs. Gynecological emergencies, along with special considerations in trauma are also included within this course.

**10-531-922 EMS Operations (1 cr.)**

Provides the paramedic student with the knowledge of operational roles and responsibilities to ensure patient, public, and EMS personnel safety.

**10-531-923 Paramedic Capstone (1 cr.)**

Provides the student with a final opportunity to incorporate their cognitive knowledge and psychomotor skills through labs and scenario-based practice and evaluations prior to taking the National Registry written and practical examinations. Technical skills attainment for each student will be compiled and/or documented within this course as required by the DHS-approved paramedic curriculum.

**10-531-924 Paramedic Clinical/Field 2 (4 cr.)**

Provides the student with the opportunity to enhance his or her learning through the practice of paramedicine in field and health care environment experiences with actual patients under the supervision of approved preceptors. Students may also have the opportunity to participate in formal high-fidelity human patient simulator experiences as a part of this course. Successful completion of this course requires the student to meet all clinical and field competency requirements at the paramedic level as defined by DHS.

**10-531-925 Fire-Medic Internship (3 cr.)**

Provides the student with field experience in paramedicine with actual patients under the supervision of a preceptor. The student will also perform the duties of a municipal firefighter. Both will be accomplished while serving as a member of a local fire department. The students will be expected to participate in the normal 24-hour shift rotation and schedule. Successful completion of this course requires the student to meet all field competency requirements at the paramedic level as defined by WI DHS EMS and complete the firefighting skills task book.

**30-531-332 Advanced Emergency Medical Technician - Part 1 (2 cr.)**

Teaches and evaluates the licensed EMT's knowledge and advanced skills including IV therapy, subq. injections and pharmacology. This course meets advanced EMT licensure requirements. Students must have current Wisconsin EMT-Basic license, updated immunizations, current AHA BLS CPR and criminal background checks. Department consent is required.

**30-531-333 Advanced Emergency Medical Technician - Part 2 (2 cr.)**

Teaches and evaluates the licensed EMT's knowledge and advanced skills including IV therapy, subq. injections and pharmacology. This course meets advanced EMT licensure requirements. Students must have current Wisconsin EMT-Basic License, updated immunizations, current AHA BLS CPR and criminal background checks. Department consent is required.

**30-531-334 Advanced EMT (4 cr.)**

Teaches and evaluates the licensed EMT's knowledge and advanced skills including IV therapy, subq. injections and pharmacology. This course meets Advanced EMT licensure requirements. Students must have current Wisconsin EMT-Basic License, updated immunizations, current AHA BLS CPR and criminal background checks. Department consent is required.

**31-531-301 First Aid/CPR (1 cr.)**

Presents and evaluates basic first aid skills necessary to care for the ill/injured until medical help arrives. Covers use of Automated External Defibrillator (AED) and CPR for all ages. Students receive an AHA Heartsaver CPR card and an FVTC First Aid certificate upon course completion.

## 536 Pharmacy

**10-536-110 Pharmaceutical Calculations (3 cr.)**

Prepares the learner to enlarge and reduce formulas and solve proportions, dilutions, allegations, and other calculations pertinent to the preparation of pharmaceuticals using metric, apothecary, avoirdupois and household measuring systems.

**10-536-113 Pharmacy Business Applications (3 cr.)**

Prepares the learner to utilize pharmaceutical business terminology, procedures, customer service, record keeping, purchasing procedures, inventory control systems, pricing, merchandizing, reference materials, ethics, roles, responsibilities, and relationships with patients and coworkers.

# Course Descriptions

## **10-536-115 Pharmacy Law (2 cr.)**

Introduces the learner to federal and state regulations that apply to pharmacy practice.

## **10-536-120 Fundamentals of Reading Prescriptions (1 cr.)**

Prepares the learner to work in a community or hospital pharmacy by exploring the role of a pharmacy technician within the healthcare team; examining each step in the prescription filling process; and identifying the top 200 drugs by brand and generic name and therapeutic class.

## **10-536-122 Pharmacology (3 cr.)**

Enhances the learner's ability to act and react appropriately in the pharmacy by learning how drugs work through examination of the anatomy, physiology, pathophysiology, and drug therapy for each of the major systems.

## **10-536-125 Pharmacy Drug Distribution Systems (2 cr.)**

Is an introductory study of the basic drug distribution systems used in community and institutional pharmacy, including automation technology, pharmacist and pharmacy technician roles, and dispensing considerations.

## **10-536-126 Pharmacy Parenteral Admixtures (3 cr.)**

Provides the learner with the skills to utilize aseptic technique in vertical and horizontal laminar flow hoods for preparation of solutions and medications to be administered intravenously, intramuscularly, subcutaneously and intradermally to patients.

## **10-536-141 Pharmacy Computer Lab (2 cr.)**

Expands the learner's ability to enter prescription orders and familiarizes learner with a variety of pharmacy software features, including updating pharmacy databases, running reports, and billing. This course is offered in a self-paced format.

## **10-536-143 Pharmacy Hospital Clinical (2 cr.)**

Provides the learner with the skills to prepare parental admixtures, fill medication carts and unit-dose drawers, control inventory, package medications, and maintain patient records in the hospital setting.

## **537 Therapeutic Massage**

### **31-537-301 Therapeutic Massage - Musculoskeletal Anatomy (2 cr.)**

Provides in-depth study of the human musculoskeletal system and teaches students how to palpate muscles. This course includes lecture and lab components.

### **31-537-302 Therapeutic Massage 1, Introduction to (4 cr.)**

Introduces students to the field of touch therapies through history and theory. The safety and sanitation of massage equipment, along with educational and legal requirements, are reviewed to educate the student on how to properly set up a massage space. Topics include draping, applications, physiological effects, endangerment sites and communication skills to work with clients.

### **31-537-303 Therapeutic Massage 2, Introduction to (4 cr.)**

Introduces deep tissues, soft tissue mobilization, trigger point therapy, myofascial release, joint movement, neuromuscular therapy, and hydrotherapy. Proper body mechanics to implementation are taught on the massage table and chair. This course is a combination of lecture and hands-on application.

### **31-537-304 Therapeutic Massage, Pathology (2 cr.)**

Covers disorders that may occur in each of the major body systems and more specifically, the signs and symptoms of selected disorders that could endanger the health of the massage clients or the practitioner. Students also gain a basic understanding of pharmacology and the possible interactions between medications and massage.

### **31-537-305 Therapeutic Massage - Kinesiology (2 cr.)**

Focuses on further study of the musculoskeletal anatomy with an emphasis on muscle groups used to perform specific actions. Course will assist students in making assessments and identifying muscles involved in certain injuries.

### **31-537-306 Therapeutic Massage - Specialized Techniques (2 cr.)**

Introduces complimentary massage techniques for clients and special populations. Topics include polarity, reflexology, pregnancy, and infant massage. Additionally, students will learn the fundamentals of Chinese Medicine and Asian bodywork including pressure point face massage. Course includes lecture and hands-on practice of techniques.

### **31-537-307 Massage Clinic & Business Practices (3 cr.)**

Provides the opportunity for students to practice and refine massage skills acquired throughout the program. Students will run a clinic and experience all aspects of the business setting. Business topics include: ethics, legal requirements, certification, application, start-up, management, marketing and finances. Students will develop a business plan.

## **31-537-308 Therapeutic Massage - Industry Standards (2 cr.)**

Introduces students to the current standard of the Therapeutic Massage industry and ethics. Topics include customer service, communication, problem solving, computer programs, and paperwork for reservations, charting, and insurance claims.

## **31-537-309 Therapeutic Massage - Anatomy & Physiology (3 cr.)**

Introduces chemical composition of the body, structure of cells, tissue types and organ systems. Students will study each of the body systems to learn how they work together to function as a whole. Nutritional sciences are also reviewed. This course is designed specifically for massage bodywork students.

## **539 Health Navigator**

### **10-539-201 Health Insurance (3 cr.)**

Analyze administration of insurance policies, procedures, & coverage decisions for variety healthcare services. Learn health insurance terminology, understand various government and commercial insurance programs, including navigation of websites. Discuss impacts of the Affordable Care Act, other regulatory factors of the U.S. system on health insurance.

## **543 Nursing-Assoc Degree/Practical**

### **10-543-101 Nursing Fundamentals (2 cr.)**

This course focuses on basic nursing concepts to provide evidenced-based care to diverse patient populations across the lifespan. Current and historical issues impacting nursing will be explored within the scope of nursing practice. The nursing process will be introduced as a framework for organizing the care of patients.

### **10-543-102 Nursing Skills (3 cr.)**

This course focuses on development of evidence-based clinical skills and physical assessment across the lifespan. Content includes mathematical calculations and conversions related to clinical skills. In addition the course includes techniques related to obtaining a health history and basic physical assessment skills using a body systems approach.

### **10-543-103 Nursing Pharmacology (2 cr.)**

This course introduces the principles of pharmacology, including drug classifications and their effects on the body. Emphasis is on the use of the components of the nursing process when administering medications.

### **10-543-104 Nsg: Intro Clinical Practice (2 cr.)**

This introductory clinical course emphasizes basic nursing skills and application of the nursing process in meeting the needs of diverse clients across the lifespan. Emphasis is placed on performing basic nursing skills, the formation of nurse-client relationships, communication, data collection, documentation, and medication administration.

### **10-543-105 Nursing Health Alterations (3 cr.)**

This course elaborates upon the basic concepts of health and illness as presented in Nursing Fundamentals. It applies theories of nursing in the care of patients through the lifespan, utilizing problem solving and critical thinking. This course will provide an opportunity to study conditions affecting different body systems and apply evidence-based nursing interventions. It will also introduce concepts of leadership and management.

### **10-543-106 Nursing Health Promotion (3 cr.)**

This course focuses on topics related to health promotion for individuals and families throughout the lifespan. We will cover nursing care of the developing family, which includes reproductive issues, pregnancy, labor and delivery, post-partum, the newborn, and the child. Recognizing the spectrum of healthy families we will discern patterns associated with adaptive and maladaptive behaviors applying mental health principles. An emphasis is placed on teaching and supporting healthy lifestyles choices for individuals of all ages. Nutrition, exercise, stress management, empowerment, and risk reduction practices are highlighted. Study of the family will cover dynamics, functions, discipline styles, and stages of development.

### **10-543-107 Nsg: Clin Care Across Lifespan (2 cr.)**

This clinical experience applies nursing concepts and therapeutic interventions to patients across the lifespan. It also provides an introduction to concepts of teaching and learning. Extending care to include the family is emphasized.

### **10-543-108 Nsg: Intro Clinical Care Mgt (2 cr.)**

This clinical experience applies nursing concepts and therapeutic nursing interventions to groups of patients across the lifespan. It also provides an introduction to leadership, management, and team building.

### **10-543-109 Nsg: Complex Health Alterat 1 (3 cr.)**

Complex Health Alterations I prepares the learner to provide and evaluate care for patients across the lifespan with alterations in cardiovascular, respiratory, endocrine, and hematologic systems as well as patients with fluid/electrolyte and acid-base imbalance, and alterations in comfort.

# Course Descriptions

## **10-543-110 Nsg: Mental Health Comm Con (2 cr.)**

This course will cover topics related to the delivery of community and mental health care. Specific health needs of individuals, families, and groups will be addressed across the lifespan. Attention will be given to diverse and at-risk populations. Mental health concepts will concentrate on adaptive/maladaptive behaviors and specific mental health disorders. Community resources will be examined in relation to specific types of support offered to racial, ethnic, economically diverse individuals and groups.

## **10-543-111 Nsg: Intermed Clin Practice (3 cr.)**

This intermediate level clinical course develops the RN role when working with clients with complex health care needs. A focus of the course is developing skills needed for managing multiple clients across the lifespan and priorities. Using the nursing process, students will gain experience in adapting nursing practice to meet the needs of clients with diverse needs and backgrounds.

## **10-543-112 Nursing Advanced Skills (1 cr.)**

This course focuses on the development of advanced clinical skills across the lifespan. Content includes advanced intravenous skills, blood product administration, chest tube systems, basic electrocardiogram interpretation and nasogastric/feeding tube insertion.

## **10-543-113 Nsg: Complex Health Alterat 2 (3 cr.)**

Complex Health Alterations II prepares the learner to provide and evaluate care for patients across the lifespan with alterations in the immune, neuro-sensory, musculoskeletal, gastrointestinal, hepatobiliary, renal/urinary, reproductive systems and shock, burns and trauma. The learner will also focus on management of care for patients with high-risk perinatal conditions and high-risk newborns.

## **10-543-114 Nsg: Mgt & Profess Concepts (2 cr.)**

This course covers nursing management and professional issues related to the role of the registered nurse. Emphasis is placed on preparing for practice as a registered nurse.

## **10-543-115 Nsg: Adv Clinical Practice (3 cr.)**

This advanced clinical course requires the student to integrate concepts from all previous courses in the management of groups of clients facing complex health alterations. Students will have the opportunity to further develop critical thinking skills using the nursing process in making clinical decisions. Continuity of care through interdisciplinary collaboration is emphasized.

## **10-543-116 Nursing Clinical Transition (2 cr.)**

This clinical experience integrates all knowledge learned in the previous courses in transitioning to the role of the graduate nurse. The course promotes relatively independent clinical decisions, delegation, and works collaboratively with others to achieve client and organizational outcomes. Continued professional development is fostered.

## **10-543-117 Nursing - Independent Study (1 cr.)**

Focuses on an area of nursing that is not offered during clinical rotations and provides the student with the chance to gain occupational experience through observation and in-depth study. Course instructor consent required and is only available to FVTC ADN students. Delivered primarily over the Internet with some clinical activity.

## **10-543-118 LPN to ADN Pathway (1 cr.)**

Designed to promote success for licensed practical nurses entering the third semester of the ADN program. Concepts are reviewed and then expanded upon. The course emphasizes five learning plans: calculating mathematical problems, physical assessment, fluid and electrolyte balance, nursing process, and nursing skills.

## **10-543-127 Paramedic to ADN Theory 1 (3 cr.)**

Explore how the nursing process is implemented to relate care of patients throughout the lifespan with alterations in cognition, elimination, comfort, grief/loss, mobility, skin integrity, and fluid/electrolyte balance and related principles of pharmacology. (Prerequisite: Accepted in Paramedic-RN Bridge program; Corequisite: 10-543-128, Paramedic to ADN Theory 2)

## **10-543-128 Paramedic to ADN Theory 2 (3 cr.)**

Nursing care of the developing family, including reproductive and mental health issues, pregnancy, labor and delivery, post-partum, the newborn, and child. Integrated understanding of related pharmacology. Study of family dynamics and grief/loss. (Prerequisite: Accepted to Paramedic-RN Bridge program; Corequisite: 10-543-127, Paramedic to ADN Theory 1)

## **10-543-129 Paramedic to ADN Clinical (2 cr.)**

Nursing care of the developing family, including reproductive and mental health issues, pregnancy, labor and delivery, post-partum, the newborn, and child. Integrated understanding of related pharmacology. Study of family dynamics and grief/loss. (Prerequisite: Accepted to Paramedic-RN Bridge program; Corequisite: 10-543-127, Paramedic to ADN Theory 1)

**10-543-130 Paramedic to ADN Skills (2 cr.)**

Basic nursing skills and Physical Assessment across the lifespan. Includes medication calculations, aseptic technique, wound care, tracheostomy care, suctioning, management of enteral tubes, medication administration, enemas, ostomy care and catheterization. (Prerequisites: Acceptance to Paramedic-RN Bridge program; 10-543-127, Paramedic to ADN Theory 1; 10-543128, Paramedic to ADN Theory 2; Corequisite: 10-543-130, Paramedic to ADN Clinical)

**30-543-300 Nursing Assistant (3 cr.)**

Prepares learners for entry-level employment as assistants to a licensed nurse in a hospital, nursing home, home health agency or community-based residential facility. Covers simple nursing tasks such as bathing and feeding patients, making beds and taking vital signs.

**30-543-300A Nursing Assistant-ELL Version (3 cr.)**

Focuses on training for Nursing Assistants. Designed for the English Language Learner and is co-taught by a Registered Nurse and an ELL staff member to assist with classroom and lab activities. Students who successfully complete the NA Program are eligible to participate in the evaluation for the Wisconsin NA Registry.

**30-543-300C Nursing Assistant (3 cr.)**

Prepares learners for entry-level employment as assistants to a licensed nurse in a hospital, nursing home, home health agency or community-based residential facility. Covers simple nursing tasks such as bathing and feeding patients, making beds and taking vital signs.

**30-543-300G Nursing Assistant - Standard (3 cr.)**

Prepares learners for entry-level employment as assistants to a licensed nurse in a hospital, nursing home, home health agency or community-based residential facility. Covers simple nursing tasks such as bathing and feeding patients, making beds and taking vital signs. Designed for the student that prefers a traditional classroom setting. This course is taught by a Registered Nurse for the theory, lab and clinical activities. Students who successfully complete the NA Program are eligible to participate in the evaluation for the Wisconsin NA Registry.

**31-543-301 Nursing Fundamentals (2 cr.)**

This course focuses on basic nursing concepts to provide evidence-based care to diverse patient populations across the lifespan. Current and historical issues impacting nursing will be explored within the scope of nursing practice. The nursing process will be introduced as a framework for organizing the care of patients.

**31-543-302 Nursing Skills (3 cr.)**

This course focuses on development of evidence-based clinical skills and physical assessment across the lifespan. Content includes mathematical calculations and conversions related to clinical skills. In addition the course includes techniques related to obtaining a health history and basic physical assessment skills using a body systems approach.

**31-543-303 Nursing Pharmacology (2 cr.)**

This course introduces the principles of pharmacology, including drug classifications and their effects on the body. Emphasis is on the use of the components of the nursing process when administering medications.

**31-543-304 Nursing: Introduction to Clinical Practice (2 cr.)**

This introductory clinical course emphasizes basic nursing skills and application of the nursing process in meeting the needs of diverse clients across the lifespan. Emphasis is placed on performing basic nursing skills, the formation of nurse-client relationships, communication, data collection, documentation, and medication administration.

**31-543-305 Nursing Health Alterations (3 cr.)**

This course elaborates upon the basic concepts of health and illness as presented in Nursing Fundamentals. It applies theories of nursing in the care of patients through the lifespan, utilizing problem solving and critical thinking. This course will provide an opportunity to study conditions affecting different body systems and apply evidence-based nursing interventions. It will also introduce concepts of leadership and management.

**31-543-306 Nursing Health Promotion (3 cr.)**

This course focuses on topics related to health promotion for individuals and families throughout the lifespan. We will cover nursing care of the developing family, which includes reproductive issues, pregnancy, labor and delivery, post-partum, the newborn, and the child. Recognizing the spectrum of healthy families we will discern patterns associated with adaptive and maladaptive behaviors applying mental health principles. An emphasis is placed on teaching and supporting healthy lifestyles choices for individuals of all ages. Nutrition, exercise, stress management, empowerment, and risk reduction practices are highlighted. Study of the family will cover dynamics, functions, discipline styles, and stages of development.

**31-543-307 Nursing: Clinical Care Across the Lifespan (2 cr.)**

This clinical experience applies nursing concepts and therapeutic interventions to patients across the lifespan. It also provides an introduction to concepts of teaching and learning. Extending care to include the family is emphasized.

# Course Descriptions

## **31-543-308 Nursing: Introduction to Clinical Care Management (2 cr.)**

This clinical experience applies nursing concepts and therapeutic nursing interventions to groups of patients across the lifespan. It also provides an introduction to leadership, management, and team building.

## **544 Gerontology**

### **10-544-160 Health and Aging (1 cr.)**

Provides an overview of wellness, exercise, sexuality, spirituality and nutrition as they relate to health and aging.

### **10-544-161 Physical Aspects of Aging (1 cr.)**

Focuses on understanding the physical aspects of the aging process that are associated with elderly populations. Topics include hearing loss, visual impairments, mobility issues and specific diseases such as Parkinson's disease, stroke, arthritis and diabetes.

### **10-544-162 Psychosocial Issues and Aging (2 cr.)**

Examines the factors and relationships that affect the older adult. Participants explore a variety of topics such as Alzheimer's, depression and dealing with losses. It also covers elder abuse and drug and alcohol concerns.

### **10-544-163 Public Policy and Aging (1 cr.)**

Introduces such concepts as elder law, advanced directives and funding sources including Medicare and Social Security. Students review federal, state and professional rights and responsibilities associated with working with an elderly population.

### **10-544-164 Community Resources for the Elderly (1 cr.)**

Explores available community options and partnerships that serve the aging population. Access to transportation, housing, work and leisure activities is included.

### **10-544-165 Prevention/Safety Concerns for the Elderly (1 cr.)**

Introduces environmental concerns such as protection from fire, prevention of falls, and medical concerns such as medication management and care provider issues. This is designed for people who are addressing the safety concerns of older adults.

## **550 Alcohol & Other Drug Abuse Services**

### **10-550-100 Substance Abuse Services, Overview of (2 cr.)**

Provides an overall picture of substance abuse services. Topics include the continuum of care, modalities of treatment, referral and assessment services, and federal, state and local agencies. A historical perspective on alcohol and drug use and prevention is also provided.

### **10-550-106 Understanding Addiction (3 cr.)**

Explores the physical, psychological and sociocultural dynamics of addiction. Treatment theories, screening criteria, environmental considerations, related complications, perinatal concerns and nontraditional alternatives are introduced.

### **10-550-109 Clients' Rights and Clinical Ethics (2 cr.)**

Explores the statutes, regulations and judicial decisions that govern the professional practice of alcohol and drug counseling. Standards, code of ethics, clients' rights and confidentiality are emphasized.

### **10-550-118 Psychopharmacology (3 cr.)**

Provides a historical and cultural perspective on alcohol and drug use and abuse, and abuse preventions. It incorporates an overview of drugs including their actions, effects, abuse, and psychopharmacology.

### **10-550-120 Assessment and Diagnosis of Substance Abuse (4 cr.)**

Provides skills needed to prepare a focused, well-organized client interview. Enables participants to collect information needed to develop and formulate a psychosocial and treatment plan. Various types and uses of diagnostic instruments are addressed. Topics also include differential diagnoses.

### **10-550-125 Counseling Skills and Practices, Basic (2 cr.)**

Prepares students to use the counseling techniques of attending, paraphrasing, reflecting, summarizing, probing, self-disclosure, interpreting and confrontation.

### **10-550-126 Counseling Theory 1 (2 cr.)**

Explores four theories of psychotherapy: psychoanalytic, Adlerian, existential and person-centered. Presents a basic understanding of each theory's philosophy, concepts, therapy goals and techniques, as well as their historical impact on psychotherapy and AODA counseling.



**10-550-130 Counseling Theory 2 (2 cr.)**

Introduces the psychotherapy theories of gestalt, reality therapy, behavior therapy, and cognitive-behavior therapy. Presents a basic understanding of each theory's philosophy, concepts, therapy goals and techniques as well as their historical impact on psychotherapy and AODA counseling.

**10-550-132 Counseling Skills Lab (1 cr.)**

Prepares learners for their internship experience. Students practice assessment and counseling skills and develop personal and clinical evaluation techniques. Students also identify the counseling theories and techniques they use in their clinical practice sessions.

**10-550-134 Mental Disorders, Overview of (3 cr.)**

Provides an overview to the diagnosis and treatment strategies of mental disorders. Focus is on understanding the mental disorders that co-occur with substance disorders. Examines individual and family crisis intervention processes.

**10-550-136 AODA Case and Records Management (2 cr.)**

Introduces the health care system and discusses continuous improvement concepts and the information systems and documentation requirements of clinical agencies. The client case management model is emphasized.

**10-550-137 Pre-Internship Seminar (1 cr.)**

Prepares the learner for the internship experience. Students develop resumes and interview for placement positions. This course reviews AODA counseling core functions and record keeping practices.

**10-550-138 Cross-Cultural Counseling (3 cr.)**

Provides specific treatment alternatives for a variety of clients and their effectiveness. Develops the skills to value and understand the context and world views of people different from themselves. Categories of diverse populations discussed include gender, minority/ethnic cultures, gay and lesbian clients, differently abled clients, and clients in the criminal justice system.

**10-550-139 AODA Advanced Internship (2 cr.)**

Provides the learner with the opportunity to assume greater responsibility and more of the duties of a substance abuse counselor in actual clinical practice. The course provides the learner with opportunities to strengthen skills and to experience the full range of responsibilities assumed by an AODA counselor while being supervised by an experienced substance abuse professional.

**10-550-141 Group Facilitation (2 cr.)**

Provides an experiential and participatory setting to develop the skills and principles necessary for facilitating a group. Basic issues in group work, group practice in specific groups, and stages of development in group process will be emphasized.

**10-550-150 Family Systems and AODA (2 cr.)**

Looks at the effects of substance abuse on the family. A multigenerational family systems approach is used, which includes an examination of how each family member develops his/her coping mechanisms. Students consider the issues of co-dependency, adult children of alcoholic parents and the dynamics of family intervention.

**10-550-160 AODA Internship (4 cr.)**

An on-site experience during which the learner is oriented to the environment of substance abuse treatment. Supervised practice in the 12 core functions of counseling including assessment, group and individual counseling, case management, and consultation is offered.

**10-550-161 AODA Internship Seminar (1 cr.)**

Provides case study presentations, discussions of current issues and research in AODA and planning for continued professional development and certification.

## 602 Automotive Technology

**10-602-100 Automotive Maintenance and Light Repair 1 (4 cr.)**

Focuses on developing skills in professionalism, safety, and the use of basic and power tools. Students are introduced to the automotive service industry and learn to use both comprehensive and manufacturer's service information to perform vehicle maintenance in 9 Automotive Service Excellence (ASE) areas.

**10-602-101 Automotive Maintenance and Light Repair 2 (4 cr.)**

Focuses on developing the skills needed to diagnose, service and repair vehicle braking systems with an introduction to ABS. Includes the development of skills needed to perform maintenance and repair of chassis and driveline related items.

**10-602-102 Automotive Maintenance and Light Repair 3 (4 cr.)**

Focuses on developing the skills needed to diagnose, service and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis. Develops skills needed to diagnose, service, and repair electrical and electronic systems, including batteries, starting, charging, and lighting systems, and computer control systems.

# Course Descriptions

## **10-602-104 Brake Systems (3 cr.)**

Focuses on developing the skills needed to diagnose, service and repair vehicle braking systems with an introduction to ABS. (ABS diagnosis, service and repair will be addressed in the Advanced Chassis course.)

## **10-602-104GM Brake Systems (3 cr.)**

Focuses on developing the skills needed to diagnose, service and repair vehicle braking systems with an introduction to ABS. (ABS diagnosis, service and repair will be addressed in the Advanced Chassis course.)

## **10-602-105 Automotive Maintenance and Light Repair 4 (4 cr.)**

Focuses on developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures. Course includes maintenance and light repair of hybrid vehicles, heating, ventilation, and air conditioning as well as supplemental inflatable restraints.

## **10-602-107 Automotive Service Fundamentals (2 cr.)**

Focuses on developing skills in professionalism, safety, and the use of basic and power tools in accordance with industry standards. Students are introduced to the automotive service industry and learn to use both comprehensive and manufacturer's service information to perform basic under-hood and under-car services.

## **10-602-107GM Automotive Service Fundamentals (2 cr.)**

Focuses on developing skills in professionalism, safety, and the use of basic and power tools in accordance with industry standards. Students are introduced to the automotive service industry and learn to use both comprehensive and manufacturer's service information to perform basic under-hood and under-car services.

## **10-602-111 Advanced Electrical Automotive (4 cr.)**

Provides students with the fundamental knowledge needed to diagnose, service, and repair electrical and electronic systems--computer fundamentals, network communications, power accessories, and air bags. Systems include anti-lock brakes, vehicle stability enhancements, and electronic steering and suspension systems. Students will perform diagnostic procedures and apply problem-solving techniques associated with electronically controlled systems.

## **10-602-112 Global Automotive Market (1 cr.)**

Provides the opportunity for the learner to develop the knowledge and understanding of Automobiles that are sold worldwide. Study similar/differences in regards to state regulation as well as the EPA rulings. Learner will also develop a mindset of service and diagnostic procedures that are used in specific areas and ones that are used worldwide. The learner will have electronic assignments pertaining to the subject matter on line using service called Blackboard.

## **10-602-113 Alternative Fuels (4 cr.)**

Prepares students with the knowledge needed to service and test the growing number of hybrid vehicles. Emphasizes safety precautions used during testing of high-voltage and electrical machines. This course will also cover compressed natural gas and diesel vehicles.

## **10-602-114 Automotive Heating, Ventilation, and Air Conditioning (4 cr.)**

Provides the student with the knowledge and skills needed to service and repair heating, cooling, and air conditioning systems. Automatic and dual zone climate control systems will also be covered. Students will learn and practice proper handling of R134a/ 1234YF refrigerants and will also be Federal 609 certified to perform automotive refrigerant repairs.

## **10-602-115 Electrical 1 - ASEP (3 cr.)**

Designed to provide the ASEP student with basic knowledge of automotive electrical applications. Including basic electrical theory, meters, servicing and repair of General Motors starting and charging systems. Students will also learn to use test equipment for the starting and charging systems diagnosis.

## **10-602-116 Electrical 2 - ASEP (3 cr.)**

Is designed to provide the ASEP student with the knowledge of automotive electrical applications. General Motors electrical components, terminology, controls and operation of the basic computer controlled devices are emphasized.

## **10-602-117 Automatic Transaxles and Transmissions (4 cr.)**

Focuses on developing the skills needed to diagnose, service, and repair automatic transmissions/transaxles including overhaul procedures.

## **10-602-118 Engine Mechanical (4 cr.)**

Focuses on developing the skills needed to diagnose, service and repair internal combustion engines. Emphasis is placed on in-vehicle repairs including engine lubrication systems and out-of-vehicle engine repair including overhaul procedures.

**10-602-119 Global Transportation Industries (2 cr.)**

Explores any aspect of the transportation industries internationally. You will be exposed to how the industry is defined in different countries. Understand how the culture affects the work environment. With the use of the internet you will explore your topic in different parts of the world. Using the discussion board in Black Board you will share your findings and discuss with others in the class the results of your research.

**10-602-120 Fuel Systems - ASEP (3 cr.)**

Focuses on the entire General Motors fuel system, including fuel tanks, gauges, fuel pump modules and fuel injection. It also will cover the operation of all fuel-related components and their operation as it relates to fuel delivery and emission systems.

**10-602-121 Manual Transmissions (4 cr.)**

Focuses on developing the skills needed to diagnose, service, and repair clutches, manual transmissions/transaxle, differentials, four-wheel drive/all-wheel drive, and drive axles.

**10-602-122 Driveline/Manual Transmission - ASEP (3 cr.)**

Designed to give an ASEP student the basic knowledge and skills needed to service General Motors manual transmissions, drivelines, differentials and axles. The ASEP student receives hands-on practice in the repair of these units.

**10-602-124 Steering & Suspension Systems (3 cr.)**

Focuses on developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures.

**10-602-124GM Steering & Suspension Systems (3 cr.)**

Focuses on developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures.

**10-602-125 Electrical & Electronic Systems 1 (2 cr.)**

Focuses on developing the skills needed to diagnose, service and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis.

**10-602-125GM Electrical & Electronic Systems 1 (2 cr.)**

Focuses on developing the skills needed to diagnose, service and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis.

**10-602-126 Powertrain Management 1 (4 cr.)**

Provides students with fundamental knowledge in automotive computer controlled engine management systems. Focuses on developing the skills needed to diagnose, service, and repair fuel, emission, and ignition control systems. Students will perform diagnostic procedures and apply problem-solving techniques associated with engine performance and drivability.

**10-602-129 Powertrain Management 2 (4 cr.)**

Teaches students to diagnose and repair engine performance concerns. This course will focus on computerized engine management systems, enhanced emissions, and engine control sensors.

**10-602-130 Import Alternative Fuels (4 cr.)**

Prepares students with the knowledge needed to service and test the growing number of hybrid vehicles. Emphasizes safety precautions used during testing of high-voltage and electrical machines. This course will also cover some of the emerging market of diesel vehicles.

**10-602-131 Import Automatic Transaxles (4 cr.)**

Introduces students to the base knowledge and skills needed to service import automatic transaxles. Principles of hydraulics and electronic controls applied to import automatic transaxles are covered. Students overhaul a variety of current import units.

**10-602-132 Import Engine Management 1 (4 cr.)**

Focuses on diagnosis and repair of import engine performance concerns, specifically related to base engine, fuel, and ignition system. Emissions systems will also be introduced.

**10-602-133 Import Engine Management 2 (4 cr.)**

Teaches students to diagnose and repair import engine performance concerns. This course will focus on computerized engine management systems, enhanced emissions, and engine control sensors.

**10-602-134 Automotive Engines Measuring - ASEP (3 cr.)**

Focuses on General Motors automotive engine design and construction. All engine parts such as pistons, connecting rods, camshafts and crank shafts are studied and measured in a lab setting. The use of micrometers, plastic gauge and other measuring equipment will be demonstrated and then used by the student.

# Course Descriptions

## **10-602-135 Dealership Co-op 2 - ASEP (2 cr.)**

Emphasizes a period of involved employment at a General Motors Dealership carried out through an organized student learning plan. Its purpose is to allow students to gain meaningful occupational experience in the automotive field.

## **10-602-136 Import Engine Mechanical (4 cr.)**

Focuses on developing the skills needed to diagnose, service, and repair import internal combustion engines. Emphasis is placed on in-vehicle repairs including engine lubrication systems and out-of-vehicle engine repair including overhaul procedures.

## **10-602-137 Dealership Co-op 3 - ASEP (2 cr.)**

Emphasizes a period of involved employment at a General Motors Dealership carried out through an organized student learning plan. Its purpose is to allow students to gain meaningful occupational experience in the automotive field.

## **10-602-138 Import Manual Transmissions (4 cr.)**

Introduces students to the basic knowledge and skills needed to repair and service import manual transmissions, drivelines, differentials, and axles.

## **10-602-139 Dealership Co-op 4 - ASEP (2 cr.)**

Emphasizes a period of involved employment at a General Motors Dealership carried out through an organized student learning plan. Its purpose is to allow students to gain meaningful occupational experience in the automotive field.

## **10-602-141 Dealership Co-op 1 - ASEP (2 cr.)**

Provides a period of employment at a General Motors dealership that follows a student learning plan. It is designed to give students occupational experience in the automotive field.

## **10-602-149 Manual Drive Train and Axles (4 cr.)**

Focuses on developing the skills needed to diagnose, service, and repair clutches, manual transmissions/transaxle, differentials, four-wheel drive/all-wheel drive, and drive axles.

## **10-602-150 Automotive Internship-ASEP/Co-op (3 cr.)**

Provides ASEP & Co-op students with work experience on actual customer vehicles in their sponsoring dealership or worksite.

## **10-602-152 Automotive Service Consulting (3 cr.)**

Examines the responsibilities and procedures associated with the multi-faceted role of an automotive service consultant. It provides an understanding of how service techniques are used to maximize customer satisfaction and profitability. Content follows guidelines established by ASE for Automotive Service Consultant (C1) certification, and integration with Oral/Interpersonal Comm reinforces the students' communication skills.

## **10-602-153 Automotive Service Management (3 cr.)**

Explores the duties and practices assigned to service managers in the successful operation of an automotive service facility. The success of any organization most often depends on the execution and management of such strategic issues as business development, personnel and fiscal operations. Integration with Psychology of Human Relations (10-809-199) provides a unique perspective on the personnel processes from recruitment of employees to supervision and performance assessment.

## **10-602-160 Welding for Automotive Technology (1 cr.)**

Focuses on developing skills in welding and cutting used in automotive mechanical repair facilities. Methods of welding and cutting include oxy-fuel and gas metal arc welding (MIG). Students will learn to set up equipment and weld in various positions using a variety of materials typically found in automotive technologies.

## **10-602-164 Automotive HVAC-ASEP (2 cr.)**

Focuses on developing the skills needed to diagnose, service, and repair General Motors climate control systems including heating, cooling, and air distribution. Upon successful completion of the Mobile Refrigerant Handling unit (ATCP-136), a state certificate will be issued.

## **10-602-165 Advanced Chassis Systems-ASEP (2 cr.)**

Focuses on developing the skills needed to diagnose, service, and repair General Motors antilock brake, vehicle stability enhancement, and electronic steering and suspension systems.

## **10-602-166 Engine/Powertrain Diagnostics-ASEP (1 cr.)**

Focuses on developing the GM ASEP students' ability to diagnose engine concerns as they relate to mechanical, electrical, fuel or auxiliary systems. Then, following the GM Service information they will repair the system back to OEM specifications.

**10-602-167 Automatic Transmission/Transaxle-ASEP (3 cr.)**

Designed to give an ASEP student the basic knowledge and skills needed to service General Motors automatic transmissions/transaxles. Principles of hydraulics and electronic controls applied to GM automatic transmissions are covered. Students overhaul a variety of GM units.

**10-602-169 Introduction to Transportation Careers (2 cr.)**

Highlights exploration and investigation in all areas of occupation within typical logistics, automotive, and heavy truck retail or service businesses. Students will participate in multiple field-study opportunities and direct interviews with professionals in a variety of automotive, truck driving, and heavy truck jobs.

## 605 Electronic Technology

**10-605-103 Circuit Analysis 1 (2 cr.)**

Uncovers the basic laws of DC circuit networks and explores the effect of reactance in AC circuits through the use of modern test equipment and analysis.

**10-605-106 Solder Rework & Repair-IPC Prep (1 cr.)**

Teaches students how to produce high-quality soldered connections that meet the IPC standard regarding materials, methods and verification.

**10-605-108 Circuit Analysis 2 (2 cr.)**

Examines advanced AC circuits, filter applications, and transformers through analysis, computer simulation, and in the lab using the latest test equipment.

**10-605-112 DC Circuits 3 - Electronics/EET (1 cr.)**

Examines the theory, application and design of series/parallel circuits such as loaded and unloaded voltage dividers and Wheatstone bridge. Specific resistor characteristics are covered. Instantaneous voltage and current values for RC and RL circuits are introduced. This course includes in-depth theory of inductors, capacitors with series and parallel applications and various types of each component. Laboratory activities are performed to verify the theory.

**10-605-113 DC Circuits 4 (1 cr.)**

Examines the theory, application and design of series/parallel circuits including loaded and unloaded voltage dividers. Circuit analysis methods such as superposition, Thevenin, and Norton theorems are introduced. Circuit simulation software is used to aid in the analysis and prediction of circuit operation. Laboratory activities are performed to verify the theory.

**10-605-116 AC Circuits 3 (1 cr.)**

Explores reactive circuits containing resistors, capacitors, and inductors. Passive filter circuits are introduced along with resonant circuits. Circuit simulation is implemented to aid in circuit analysis.

**10-605-118 Circuit Analysis (2 cr.)**

Examines advanced AC circuits, filter applications, and transformers through analysis, computer simulation, and in the lab using the latest test equipment. In-depth coverage utilizing complex numbers, polar & rectangular operators, superposition, Thevenin, Norton, and other circuit analysis methods are implemented.

**10-605-119 Linear Electronics (3 cr.)**

Emphasizes modern linear integrated circuits (ICs). Covered in depth are the operational amplifier IC and its circuit applications: amplifying, comparing, summing, wave shaping, regulating, oscillating and filtering. Laboratory time is spent simulating and constructing circuits and evaluating and troubleshooting circuitry.

**10-605-121 Solid State 2-Electronics/EET (1 cr.)**

Examines the operation and theory of transistors and the construction of amplifiers. In-depth coverage of transistor biasing, varactors and special diodes are covered as well. Laboratory experiments are performed to verify the theory.

**10-605-122 PCB Assembly Systems (1 cr.)**

Trains students to work with surface mount technology (SMT) equipment used in electronic circuit manufacturing, including stencils and foils, pick and place machines, and reflow ovens. They will learn machine setup, calibration, and quality control.

**10-605-125 Semiconductors 3 (1 cr.)**

Covers DC and AC analysis of amplifiers. Bypass and coupling capacitor functions, along with circuit limitations due to circuit configuration, are also examined.

**10-605-129 PC Hardware/Operating Systems (1 cr.)**

Trains students to work with a critical tool for technicians and become familiar with computer repair (A+ Prep). Students will experience all through hands-on laboratory activities. They will also learn to understand fundamental computer hardware/software concepts, configuration and troubleshooting.

**10-605-130 Digital 1 (1 cr.)**

Introduces digital electronics including Boolean, the operation of logic gates, and the theory of combination logic circuits. Laboratory activities are performed to verify the theory.

# Course Descriptions

## **10-605-131 Digital Electronics 2 (1 cr.)**

Examines data manual usage. This course introduces programmable logic devices and Karnaugh mapping. It also covers encoders, decoders, multiplexers, binary adders and parity circuits. Laboratory activities are performed to verify the theory.

## **10-605-132 Digital Electronics 3 (2 cr.)**

Covers circuit reduction techniques such as Boolean Algebra, Karnaugh Mapping, Sum of Products, etc. Laboratory activities are performed to verify the theory.

## **10-605-133 Digital Electronics 4 (1 cr.)**

Covers counters, reviews Sum-of-Products and Product of Sums and more in-depth coverage of Karnaugh maps. This course utilizes a group based final project.

## **10-605-134 Digital Electronics 1-Electronics/EET (1 cr.)**

Introduces digital electronics including Boolean, the operation of logic gates, and the theory of combination logic circuits. Laboratory activities are performed to verify the theory.

## **10-605-139 Intro to Microcontrollers (2 cr.)**

Introduces students to embedded computer systems through exploration of microcontroller operation, architecture and programming. Students will lay the groundwork for future courses and electronic projects while experimenting with programming language concepts and basic interfacing.

## **10-605-141 LabVIEW Graphical Programming (2 cr.)**

Introduces LabVIEW, which is used to write programs using the computer's serial or USB port and computer-based data acquisition cards. Projects introduce features of the acquisition boards and the software package. Students write programs for data acquisition applications involving digital input and output, analog input and output, and serial input and output.

## **10-605-142 LabVIEW and Data Acquisition (DAQ) (1 cr.)**

Introduces LabVIEW, which is used to write programs using the computer's serial port and computer-based data acquisition cards. Projects introduce new features of the acquisition boards and the software package. Students write programs for data acquisition applications involving digital input and output, analog input and output, and serial input and output. A working knowledge of solid-state electronics is required.

## **10-605-145 Embedded Programming 1 (1 cr.)**

Introduces students to embedded computer systems through exploration of microcontroller operation, architecture and programming. Students will lay the groundwork for future courses and electronic projects while experimenting with programming language concepts and basic interfacing.

## **10-605-146 Embedded Programming 2 (1 cr.)**

Continues with topics from Embedded Programming 1 and further explores embedded controller systems operation, architecture, and programming. Students will lay the groundwork for future courses and electronic projects while experimenting with programming language concepts and interfacing.

## **10-605-148 Embedded Programming 3 (1 cr.)**

Continues with topics from Embedded Programming 2 and further explores embedded controller systems operation, architecture and programming. Successful students will exit this course prepared to develop and implement larger projects involving more advanced topics relative to microcontrollers.

## **10-605-153 Networking - Ethernet (1 cr.)**

Explores Ethernet network architectures, media, protocols, and security, and their application in industry today.

## **10-605-154 Embedded C Programming (2 cr.)**

Teaches students to program PCs and microcontrollers using the C language. They will apply fundamental programming skills like branching and repetition on both analog and digital Input-Output in the lab.

## **10-605-155 Product Testing/Systems (1 cr.)**

Addresses programming on Test and Measurement with the graphical programming language LabVIEW. Students create electronic product testing, instrumentation, data acquisition, and data analysis.

## **10-605-156 CAD for Electronics (1 cr.)**

Introduces students to computer-aided design (CAD) techniques used in the electronics field. Students learn the basics of the AutoCAD software, including the draw, modify, dimension and plotting sets of commands. Students acquire the skills needed to create an electronics symbols library and to draw electronic schematics.

## **10-605-157 Microcontroller Interfacing 1 (2 cr.)**

Explores midrange microcontroller peripherals using assembly and C programming. Students will create microcontroller projects that demonstrate how many of today's consumer products function.

**10-605-159 PCB Design (1 cr.)**

Teaches students to design a printed circuit board using the OrCAD/Cadence design suite. Provides an overview of the Electronic Design Automation (EDA) tools used in industry today.

**10-605-160 Microcontroller Interfacing (3 cr.)**

Explores mid-range microcontroller functionality using C programming to develop embedded applications. Projects will utilize many of the microcontroller features such as USB, Ethernet, scheduled and non-scheduled interrupts, analog to digital conversion, etc.

**10-605-162 Electronics Final Project (2 cr.)**

A final research and construction project that includes written and oral presentations and is centered on a microprocessor based circuit application. This capstone course will apply much of your previous coursework on an individual or group project as determined by the instructor.

**10-605-163 Electronic Construction Techniques (1 cr.)**

Introduces the use of common tools for constructing electronic devices. The safe use and application of hand and power tools is practiced through construction projects. Soldering techniques, both through-hole and surface mount, are studied in detail.

**10-605-170 Digital Communications (1 cr.)**

Focuses on communication protocol and bus structures such as RS232, 420, 485, IEEE 488 (GPIB), IEEE 1492 (Firewire) and 12C. PCM, PAM, FSK, time, space and frequency division multiplexing are also covered. Synchronous and asynchronous characteristics and applications, data compression and encryption, and error checking schemes are introduced, and industrial networking topics are discussed.

**10-605-182 Electronic Communications (2 cr.)**

Provides an in-depth study of radio communication circuits. Topics include AM, SSB, FM, phase modulations, receivers, transmitters, transmission lines and antennas. Students construct several projects following industry safety procedures.

**10-605-193 Internship 2 - Electronics (2 cr.)**

Allows students to explore their future career. An internship can be a tremendous learning experience, providing an insight into a work environment for many program graduates. Students will apply what they have learned and become motivated to learn more.

## 606 Mechanical Technology

**10-606-102 CATIA V5 - Basic (2 cr.)**

Introduces methods for creating three-dimensional models using CATIA V5 software. Topics include product structure, sketcher, solid modeling, drafting, assembly, surface modeling and sheet metal design. Basic computer skills are required.

**10-606-107 CATIA V5 - Advanced (2 cr.)**

Covers the advanced features of three-dimensional modeling, analysis and simulation. This course was created for designers with a CATIA V5 background. It focuses on solid, surface, sheet metal, mold tooling, systems design, stress analysis and kinematics.

**10-606-109 Geometric Dimensioning and Tolerancing (2 cr.)**

Provides fundamentals of geometric dimensioning and tolerancing (GD&T) per the ASME Y14.5M standard. The development of the technical knowledge and skills required for application and interpretation of GD&T is the focus of the course. Design requirements for functional gages and other methods used to verify GD&T specifications are also presented.

**10-606-111 Design Problems (4 cr.)**

Applies the principles and methods used to solve basic design problems. Students prepare preliminary layouts, assembly drawings and detail drawings. CAD experience is required.

**10-606-113 Technical Drafting 1 (5 cr.)**

Covers concepts from the initial design process to the generation of Computer Aided Drafting (CAD) documents that precisely and graphically describes a part. Students will learn common industry drafting practices as well as CAD standards and guidelines. The course will lay down the proper groundwork for the Technical Drafting 2 course.

**10-606-113A Technical Drafting 1A (3 cr.)**

Emphasizes current industrial practices. Topics include instrument usage, applied geometry, technical sketching, multi-view projection and sections.

**10-606-113B Technical Drafting 1B (2 cr.)**

A continuation of Technical Drafting 1A, which emphasizes current industrial practices. Dimensioning and tolerancing, threads and fasteners, and auxiliary views are covered.

# Course Descriptions

## **10-606-114 AutoCAD, Introduction to (1 cr.)**

Covers the very basics of AutoCAD - introduction to the user interface, basic drawing commands, basic editing commands, and basic viewing commands. This course will give the student a comfort level for working within the AutoCAD environment and the knowledge needed for more advanced CAD courses offered within the various degree programs.

## **10-606-115 Design of Tooling (4 cr.)**

Provides a background in the fundamentals of design and the application of jigs, fixtures, gauging devices and stamping dies in the manufacturing process. Students prepare general assembly and detail drawings of tool designs that use commercial tooling components. CAD experience is required.

## **10-606-117 Technical Drafting 2 (4 cr.)**

A continuation of Technical Drafting 1. Topics include descriptive geometry, intersections and developments, and working drawings. CAD experience is required.

## **10-606-117A Technical Drafting 2A (1 cr.)**

A continuation of Technical Drafting 1A and 1B. Topics include working drawings such as detail and general assemblies.

## **10-606-117B Technical Drafting 2B (3 cr.)**

A continuation of Technical Drafting 2A. Topics include descriptive geometry and intersections and developments.

## **10-606-119 Statics and Strength of Materials (3 cr.)**

Uses mathematical concepts to determine how forces are distributed through trusses and other rigid structures. Friction and applications of direct stress, strain, thermal expansion and thermal stress are covered.

## **10-606-121 Elements of Machine Design (3 cr.)**

Examines a variety of problems involving the principles of design. Topics include centroids, moments of inertia, beam selection, bending moments, torsion, Mohr's circle, combined stress and beam deflection. Algebra and other applications of mathematics are used extensively.

## **10-606-123 Kinematics (4 cr.)**

Emphasizes motion analysis of existing mechanisms. Motion characteristics are examined through the use of skeleton diagrams and graphical techniques. Topics include application of skeleton diagrams, angular velocity, linear velocity, velocity polygons, cams, gears and gear trains. CAD experience is required.

## **10-606-124 Intro to Product Design & Rapid Prototyping (2 cr.)**

Introduces students to additional solid modeling software, the design process, and rapid prototyping of models. Previous solid modeling experience required.

## **10-606-125 3D Modeling and Materials (2 cr.)**

Familiarizes the learner with methods of modeling and material creation to build realistic-looking scenes for output to print, Web, animation or video. The student will end the class with a final project of their own choosing, demonstrating their knowledge of the skills learned in this class.

## **10-606-127 Intermediate AutoCAD (1 cr.)**

Builds upon the groundwork laid down in either Intro to AutoCAD or Technical Drafting 1. Students will learn more about drawing commands, editing commands, properties of objects, dimensioning and printing.

## **10-606-128 Advanced AutoCAD (2 cr.)**

Suitable for students comfortable with the basics of creating an AutoCAD drawing, as taught in Intro to AutoCAD and Intermediate AutoCAD. This course focuses on using efficiency tools including grips and tool palettes, drawing with complex objects including polylines, regions and advanced text objects, defining blocks and attributes, using external reference files and image files, using layouts and advanced plotting features, creating sheet sets, and enhancing productivity with simple customization of AutoCAD. It is recommended that students have completed Intro to AutoCAD and Intermediate AutoCAD, or have appropriate industry experience in AutoCAD.

## **10-606-130 CAD Standards (3 cr.)**

CAD standards is an often overlooked concept within a CAD department. Efficiency and consistency can be optimized with well thought out and documented CAD standards. Standards and how they apply to layers, dimensions, text, title blocks, plotting, as well as other objects, will be covered. Students will be allowed to work with the CAD program of their choice (AutoCAD, Inventor, SolidWorks or Catia). The course assumes familiarity and a comfort level with at least one of those software packages.

## **10-606-131 AutoCAD Customization (2 cr.)**

Will introduce the student to the various objects that can be customized within AutoCAD's graphical user interface. AutoCAD's macro language and DIESEL language will be applied to the ribbon, toolbars, tool palettes and other interface objects. Other customizable objects will also be covered. The course assumes familiarity and a comfort level with AutoCAD and will use the latest release of the software, however, backward compatibility will be discussed.



**10-606-132 Intro to Visual LISP Programming (3 cr.)**

Teaches the non-programmer how to program AutoCAD to automate common and not so common tasks. Information can be gathered and used over and over again. Terminology, storage functions, logic, looping and branching functions are all covered. You will be amazed at the power you can build into your programs! The course assumes familiarity and a comfort level with AutoCAD and will use the latest release of the software, however, backward compatibility will be discussed.

**10-606-133 Advanced Visual LISP Programming (3 cr.)**

Builds on the concepts taught in the Introduction to Visual LISP course. Entity manipulation, working with selection sets and symbol table access are some of the topics to be covered. The course assumes familiarity and a comfort level with AutoCAD and will use the latest release of the software, however, backward compatibility will be discussed.

**10-606-134 DCL Programming (3 cr.)**

Takes Visual LISP to the next level. Dialog Control Language allows students to create a dialog box interface for their programs. Tools such as buttons, toggles, radio buttons, lists, sliders and image tiles are all covered in this course. The course assumes previous Visual LISP programming experience.

**10-606-135 VBA Programming (3 cr.)**

Introduces Visual Basic for Applications, which is a programming interface for many computer applications. In this course, the basics of the language will be examined. Students will be allowed to use the CAD program of their choice (AutoCAD, Inventor, SolidWorks or Catia) and apply the principles of VBA to automate the tasks of the CAD software. The course assumes a very high comfort level with AutoCAD, Inventor, SolidWorks or Catia.

**10-606-136 Document Management - Autodesk Vault (2 cr.)**

Focuses on the use of Autodesk Vault for setting up a safe and secure file sharing environment for companies that are using Autodesk Inventor or AutoCAD. The course assumes familiarity with AutoCAD or Inventor. Knowledge of Product Life Management (PLM) helpful but not required.

**10-606-137 Document Management - SmartTeam (2 cr.)**

Focuses on the use of SmartTeam for setting up a safe and secure file sharing environment for companies that are using SolidWorks or Catia. The course assumes familiarity with SolidWorks or Catia. Knowledge of Product Life Management (PLM) helpful but not required.

**10-606-138 Document Management - PDMWorks (2 cr.)**

Focuses on the use of PDMWorks for setting up a safe and secure file sharing environment for companies that are using SolidWorks or Catia. The course assumes familiarity with SolidWorks or Catia. Knowledge of Product Life Management (PLM) helpful but not required.

**10-606-139 Introduction to Autodesk Inventor (2 cr.)**

Will introduce the student to the basics of Autodesk's Inventor software. Close attention will be paid to properly navigating the interface. Sketching, dimensional and geometric constraints, part modeling, drawing creation, and assembly modeling will all be examined.

**10-606-140 Advanced Autodesk Inventor (2 cr.)**

A continuation of the Introduction to Inventor course. Surface modeling, sheet metal, creating part libraries, weldments and managing large assemblies are the major topics to be covered. The course assumes at least entry-level familiarity with Autodesk Inventor.

**10-606-141 Introduction to SolidWorks (2 cr.)**

Will introduce the student to the basics of the SolidWorks software. Close attention will be paid to properly navigating the interface. Sketching, dimensional and geometric constraints, part modeling, drawing creation, and assembly modeling will all be examined.

**10-606-142 Advanced SolidWorks (2 cr.)**

A continuation of the Introduction to SolidWorks course. Surface modeling, sheet metal, creating part libraries, weldments and managing large assemblies are the major topics to be covered. The course assumes at least entry-level familiarity with SolidWorks.

**10-606-143 SolidWorks Customization (2 cr.)**

Will introduce the student to the various objects that can be customized within SolidWorks' graphical user interface. Its macro language will be covered and applied to toolbars and other input mechanisms. The course assumes familiarity and a comfort level with SolidWorks.

**10-606-144 Inventor Customization (2 cr.)**

Will introduce the student to the various objects that can be customized within Inventor's graphical user interface. Its macro language will be covered and applied to toolbars and other input mechanisms. The course assumes familiarity and a comfort level with Inventor.

# Course Descriptions

## **10-606-145 CATIA Customization (2 cr.)**

Will introduce the student to the various objects that can be customized within CATIA's graphical user interface. Its macro language will be covered and applied to toolbars and other input mechanisms. The course assumes familiarity and a comfort level with CATIA.

## **10-606-151 Sketching and the Design Process (1 cr.)**

Introduces sketching, which is typically one of the first steps in working out and documenting a design. Almost all initial ideas are hand sketched long before any graphical data is created with the CAD system. Basic sketching techniques and their application to one view, oblique, isometric, and perspective drawings are covered. Lettering techniques are also covered.

## **10-606-152 CAD and Geometric Constructions (1 cr.)**

Focuses on the very basics of using AutoCAD software. This course will cover the interface and basic drawing, editing, and printing commands. Applying constructive geometrical thinking to solve more complex problems and accurately locate points, edges, and surfaces when the software cannot do so "automatically" is also covered.

## **10-606-153 Multiview Projections (1 cr.)**

Covers standard practices of orthographic projection. Best practices for deciding which views to show, how they should be oriented in your drawing, and how to represent key information such as edges, surfaces, vertices, hidden lines, centerlines, and other crucial details are covered.

## **10-606-154 Section Views and Auxiliary Views (1 cr.)**

Explains that often times there are internal features that lie behind other features, and features that lie on inclined and oblique surfaces. This course covers the creation and placement of section and auxiliary views, allowing portrayal of these features. Descriptive geometry techniques for finding piercing points, points of planar intersections, and surface development are also covered.

## **10-606-155 Dimensioning and Tolerancing (1 cr.)**

Explains that dimensions and notes define the size, location, finish, and other requirements to fully describe what is to be manufactured. These standards are covered in this course. Tolerancing, or making allowances for human ability, material properties, and the manufacturing environment is also covered.

## **10-606-156 Threads and Fasteners (1 cr.)**

Explains that the ability to properly display various standardized thread forms and fasteners is, naturally, extremely important as most parts ultimately need to be attached to other parts in some manner. This course will show students how to depict and call out these features on a drawing. Both Metric and Unified National Thread series will be covered.

## **10-606-157 Gears and Cams (1 cr.)**

Covers two concepts used in the creating of motion using mechanical parts, gears and cams. Students will learn the geometry comprising these two important features, find out how they work, and how to depict them on a mechanical drawing.

## **10-606-158 Working Drawings (1 cr.)**

Covers the methods for producing working drawings utilized by manufacturers when building parts. Tolerances will be used to ensure the proper fit and function of mating parts. Students will learn the requirements of a detailed part drawing, as well as what is required on assembly drawings and weldments. The workings of an engineering office will also be addressed.

## **10-606-159 Structural and Piping Drafting (1 cr.)**

Will teach students how to create a proper drawing of structures comprised of beams, channels, and tubing. Detailed and schematic piping drawings will also be covered. Students will learn how to draw pipe fittings and how they are assembled to tanks, vats, and other components.

## **10-606-160 AutoCAD Mechanical (1 cr.)**

Will expose the student to the many automated features built into the AutoCAD Mechanical software. Features such as detailing, hardware and symbol libraries, bill of material generation, adherence to CAD standards, integrated layer management, and smart dimensioning tools will be covered.

## **10-606-190 Mechanical Design Occupational Experience (2 cr.)**

Provides a working relationship with the student, employer and the FVTC Mechanical Design department. Students employed in industry apply their training and acquire skills not available in the classroom. The ability to take this course is subject to job site availability, appropriateness of available training, scheduling and travel. Department consent is required.

## 609 Electronics

### **10-609-101 Electrical Safety, Industry (1 cr.)**

Describes hazards of electrical work and basic approaches to working safely. Students learn skills to recognize, evaluate and control electrical hazards. Includes personnel protective equipment and how to perform construction tasks safely. Introduces OSHA mandated Lockout/Tagout procedures and prepares learners for additional safety training.

### **10-609-170 Ladder Logic and Control Devices (1 cr.)**

Introduces ladder logic diagrams used to document power control networks. Discrete industrial devices are also studied including switches, contactors, relays, timers, and motor starters. Students will design, construct, and troubleshoot ladder logic circuitry following safe working procedures. Memory addressing schemes and PLC hardware of an Allen-Bradley SLC-500 is introduced. Students taking this course should have a working knowledge of DC and AC circuits.

### **10-609-171 Electrical Motors (1 cr.)**

Evaluates the operation of AC motors and DC motors such as the series, shunt and compound motors. Various types of servo motors are also examined. Laboratory activities reinforce the theory. A working knowledge of electronics is recommended.

### **10-609-172 DC/AC Variable Speed Drives (1 cr.)**

Covers operational controls, characteristics and drive functionality. Laboratory activities involve drive setup and wiring as well as safe troubleshooting and testing practices. A working knowledge of electronics is recommended.

### **10-609-173 Programmable Logic Controllers 1 (1 cr.)**

Covers PLC I/O configuration, ladder diagram networks, latches, timers, counters, comparing and forcing concepts. Hands-on labs use the Allen Bradley SLC-500 series controllers.

## 620 Electromechanical Technology

### **10-620-103 DC Circuits 3 - Aircraft/Electromechanical (1 cr.)**

Covers capacitors and inductors including time constants and instantaneous voltage and current values of RC and RL circuits. Applications and various types of capacitors and inductors are discussed. Magnetism, electromagnetism, and devices, such as relays and solenoids, are also presented. Laboratory activities are performed to verify the theory.

### **10-620-111 Fluid Power 1 (1 cr.)**

Provides an introduction to fundamental principles and laws of fluid power. Laboratory activities are performed to verify the theory.

### **10-620-112 Fluid Power 2 (1 cr.)**

Introduces intermediate fluid power systems. Students examine how fluid power components operate and how they interact within fluid power systems. This course will primarily deal with hydraulic systems. Laboratory activities are performed to verify the theory.

### **10-620-113 Fluid Power 3 (1 cr.)**

Introduces intermediate fluid power systems. Examine how fluid power components operate and how they interact with fluid power systems. This course will primarily deal with pneumatic systems. Laboratory activities are performed to verify the theory.

### **10-620-114 Fluid Power 4 (1 cr.)**

Provides an introduction to advanced fluid power systems. Students examine advanced components and controls within a fluid power system. Laboratory activities are performed to verify the theory.

### **10-620-131 Electrical Power Distribution 1 (1 cr.)**

Describes hazards of electrical work and basic approaches to working safely. Students learn skills to recognize, evaluate, and control electrical hazards. Students will learn how to install and troubleshoot industrial machine safety devices such as safety switches, safety relays, light curtains, and scanners.

### **10-620-132 Electrical Power Distribution 2 (1 cr.)**

Requires students to work with industrial power distribution systems. This course focuses on in-plant distribution of single- and three-phase systems as applied to automated manufacturing systems. It introduces the student to the National Electrical Code and how it applies to the electrical distribution in a plant setting. It also introduces OSHA mandated Lockout/Tagout procedures and prepares learners for additional safety training.

### **10-620-142 Motors and Drives 2 (1 cr.)**

Evaluates the operation of AC induction motors and drives. Theory and labs will include operational controls, characteristics, setup, wiring, controlling, troubleshooting and testing of both AC motors and drives.

### **10-620-148 Motors and Drives 1 (1 cr.)**

Evaluates the operation of DC generators, DC motors, DC drives, and AC synchronous motors. Theory and lab will include operational controls, characteristics, setup, wiring, controlling, troubleshooting, and testing of both DC motors and drives.

# Course Descriptions

## **10-620-152 Industrial Solid State 1 (1 cr.)**

Examines the theory of the 555 integrated circuit timer and the 741 operational amplifier. Laboratory activities are performed to verify the theory.

## **10-620-153 Industrial Solid State 2 (1 cr.)**

Studies the operation of semiconductor power devices that drive industrial actuators such as the UJT, SCR and TRIAC. Amplitude, phase control and pulse-width modulation applications are presented. Laboratory activities are performed to verify the theory.

## **10-620-154 Hydraulics 1 (1 cr.)**

Introduces the fundamental principles and laws of fluid power. Laboratory activities reinforce the theory.

## **10-620-155 Hydraulics 2 (1 cr.)**

Examines the theory of pumps, actuators and various types of valves. Laboratory activities are performed to verify the theory.

## **10-620-156 Hydraulics 3 (1 cr.)**

Examines accessory components of a hydraulic system. This course concludes with the analysis of several hydraulic circuits. Laboratory activities are performed to verify the theory.

## **10-620-160 Mechanical Linkages 1 (1 cr.)**

Covers the mechanical theory of various linkages such as levers, four-bar mechanisms, shaft couplings and alignment. Laboratory activities are performed to verify the theory.

## **10-620-162 Pneumatics 1 (1 cr.)**

Introduces the principles of compressed air and studies various control operations such as speed, force and direction. Laboratory activities are performed to verify the theory.

## **10-620-163 Pneumatics 2 (1 cr.)**

Covers the different types of valves and pilot devices. This course concludes by analyzing how actuators and components control various types of pneumatic circuits. Laboratory activities are performed to verify the theory.

## **10-620-164 Elements of Machines 1 (1 cr.)**

Emphasizes the mechanical elements of industrial machines. Principles of leveling motors, fasteners, bearings, and couplings are covered. Terminology, selection, and proper installation and maintenance are stressed.

## **10-620-165 Elements of Machines 2 (1 cr.)**

Emphasizes the mechanical elements of industrial machines. Principles of power transmission, belt drives, and chain drives are covered. Terminology, selection, and proper installation and maintenance are stressed.

## **10-620-169 Electronic Shop Practices (1 cr.)**

Introduces various aspects of the electronic shop such as basic soldering principles, surface mount technology, troubleshooting, repairing and circuit protection devices and performing panel-wiring exercises. Customer relations is also discussed.

## **10-620-170 Electrical Generators & Power Dist Systems (1 cr.)**

Examines the construction and operation of generators and covers power distribution systems such as the single-phase Edison and three-phase delta and wye configurations. The theory is reinforced by laboratory activities.

## **10-620-171 Electrical Motors-DC (1 cr.)**

Evaluates the operation of DC motors such as the series, shunt, and compound motors. Various types of servo motors are also examined. Laboratory activities reinforce the theory. A working knowledge of electronics is recommended.

## **10-620-172 Electrical Motors-AC (1 cr.)**

Covers the operation of single-phase and three-phase AC motors. Laboratory activities are performed to reinforce the theory.

## **10-620-177 Mechanical Drives 1 (1 cr.)**

Covers the principles, operation, maintenance and configurations of belt and chain drives. Laboratory activities are performed to verify the theory.

## **10-620-182 Programmable Logic Controllers 2 (1 cr.)**

Covers sequencers, jumps, arithmetic operations and analog operations of the Allen-Bradley SLC-500 programmable controller. Sensor interfacing is included. Programming exercises verify the theory.

## **10-620-183 Process Variables and Measurements 1 (1 cr.)**

Covers the properties and characteristics of pressure and temperature variables associated with process control. Instruments that measure these variables are calibrated and used to determine the condition of the variables. Completion of Pneumatics 1 and Solid State 2 is recommended before taking this course.

**10-620-184 Process Variables and Measurements 2 (1 cr.)**

Covers the properties and characteristics of level, flow and analytical variables associated with process control. Instruments that measure these variables are calibrated and used to determine the condition of the variables.

**10-620-185 Instrumentation and Process Control 1 (1 cr.)**

Describes the instrument devices used in open- and closed-loop process control systems, illustrates the P&ID symbols to which they are assigned, and performs calibration techniques. Laboratory activities are performed to verify the theory.

**10-620-186 Instrumentation and Process Control 2 (1 cr.)**

Describes the various production methods used in process industries and provides a background of PID control strategies and controller tuning to accommodate the dynamics of various systems. Laboratory activities are performed to verify the theory.

**10-620-187 Sensors (1 cr.)**

Covers various types of sensors used in industrial operations such as inductive and capacitive proximity detectors, Hall-effect devices and various optical sensing modes. Laboratory activities are performed to verify the theory.

**10-620-188 System Troubleshooting (1 cr.)**

Develops troubleshooting skills by using several closed-loop systems on a level and flow process trainer. Students identify faults electrically inserted into this trainer by recognizing symptoms, creating and using flow charts for analysis, and finding the problem with test instruments.

**10-620-189 Electromechanical Systems 1 (1 cr.)**

Capstone course that uses the competencies learned throughout the Electromechanical program to operate various systems that interface with each other such as digital, servomechanisms, electro-hydraulic and gear mechanisms. Laboratory activities are performed to verify the theory.

**10-620-190 Advanced AC/DC Variable Speed Drives (1 cr.)**

Covers graphical programming and various communication techniques of current and vector drives. A multifunctional trainer is configured to demonstrate complex master/slave drive functions, on-line monitoring of drive performance, and to build troubleshooting skills.

**10-620-192 Advanced Programmable Logic Controllers 1 (1 cr.)**

An introduction to the Siemens S7-200 Programmable Controller. Course work will include controller start-up procedures, examination of data types and memory modes, the basic instruction set for programming ladder logic, and hands-on activities used to reinforce the areas studied.

**10-620-193 Advanced Programmable Logic Controllers 2 (1 cr.)**

A continuation of the study of the Siemens S7-200 Programmable Controller. Examination of advanced ladder diagram instructions and industrial PLC applications is the emphasis of the course. Hands-on activities programming the PLC for specific industrial applications are used to reinforce the areas studied.

**10-620-195 Industrial Operations 1 (1 cr.)**

Theory-based course primarily designed for students who have had little or no industrial experience. The organizational structure and departmental responsibilities of a typical manufacturing company are discussed. Plant layout, material handling, production and inventory strategies are also covered.

**10-620-196 Industrial Operations 2 (1 cr.)**

Theory-based course that introduces the student to the fields of industrial engineering such as time and motion study, quality control and engineering economy.

**10-620-197 Robotics 1 (1 cr.)**

Introduces the terminology, movements and the physical construction of the robot and the applications for which they are used. Basic programming is also covered. Students become familiar with the equipment in laboratory activities. Instructor permission required.

**10-620-198 Robotics 2 (1 cr.)**

Requires students to write programs that enable a robot to perform various operations. Laboratory activities are completed to verify the programs.

## 621 Industrial Welding Technology

**10-621-101 Welding Codes & Testing (2 cr.)**

Begins by providing an overview of welding codes and inspector's responsibilities. The focus then moves to the study of a specific welding code book. The course culminates with the student cutting, polishing, and testing weldments in accordance with the welding code previously studied.

# Course Descriptions

## **10-621-105 Welding/Metal Fab Intro & Safety (1 cr.)**

Provides instruction in welding and metal fabrication safety. Students will identify environmental work and personnel hazards common with the industry and proper personal protection methods. Students will also perform common tasks essential to utilization of the welding and metal fabrication lab.

## **10-621-108 Weld Print Reading (1 cr.)**

Provides practice in reading shop drawings. Topics include orthographic projection, auxiliary views, revolved sections, surface and centerline relationships, isometric drawings, scale drawing and tolerances.

## **10-621-111 Welding NDE (2 cr.)**

Focuses on nondestructive testing (NDE). Emphasis will be placed on Visual Examination, Liquid Penetrant, Magnetic Particle and Ultrasonic Testing. Emphasis will also be placed on both the theoretical and hands-on use of equipment used in nondestructive testing.

## **10-621-113 Robotic Arc Welding, Advanced (2 cr.)**

An overview of robots used in industry. Automatic welding principles, including material handling, jigs and fixturing, are evaluated. Students program a robot to weld fixtured parts using the GMAW process.

## **10-621-114 Weld Symbols (1 cr.)**

Teaches students to interpret detailed weld symbols using the American Welding Society standard.

## **10-621-115 Welding Processes, Design & Costs (2 cr.)**

Studies such processes as plasma, submerged, thermit and electron beam welding. Also emphasizes design concepts and rules of design as well as estimating costs of welding.

## **10-621-116 Welding Metallurgy (3 cr.)**

Introduces students to basic metallurgy including the location of ore deposits, derivation of metals from their ores, refinement and purification, and admixture and alloying. The classification of ferrous and nonferrous metals and the study of basic metallurgical diagrams is also discussed. Students focus on the behavior of metal during welding and the effects of welding on the properties of metals.

## **10-621-117 Weldability of Materials (3 cr.)**

Focuses on problems and solutions encountered when welding similar and dissimilar metals. Students will learn to determine the capacity of a metal to be welded and perform satisfactorily under fabrication conditions imposed. Emphasis is on porosity in welds, hydrogen problems, heat treatments in welding, corrosion in stainless steel welds, hot and cold cracking and their solutions.

## **10-621-121 SMAW Techniques 1 (2 cr.)**

Covers the process commonly known as stick welding. Upon completion of this course, the student will be able to weld in all positions, read some basic weld symbols, and have a basic understanding of written welding procedures.

## **10-621-122 SMAW Techniques 2 (2 cr.)**

A continuation of SMAW Techniques 1. Students will complete lab exercises from SMAW Techniques 1. The student will be able to thoroughly understand a written welding procedure. Emphasis will be placed on the AWS D1.1 welding code. Upon completion of this course, the student will be able to weld in all positions without a backing plate on both V-Groove plate and pipe.

## **10-621-123 GMAW Techniques 1 (2 cr.)**

Demonstrates welding on steel sheet metals and plates. Emphasis is placed on axial spray, pulse spray and short circuit mode of transfer. Upon completion of this course, the student will be able to weld in all positions, read basic weld symbols, and have an understanding of written welding procedures.

## **10-621-124 GMAW Techniques 2 (2 cr.)**

Teaches students to weld on stainless steel and aluminum sheet metal and plate. The student will be able to differentiate, select proper electrodes, shielding gases, and properly adjust parameters. Emphasis is placed on axial spray, pulse spray and short circuit mode of transfer depending on base metal. Upon completion of this course, the student will be able to weld in all positions, read some basic weld symbols, and have a basic understanding of written welding procedures.

## **10-621-125 FCAW Techniques (2 cr.)**

A study and operation of primarily flux cored arc welding. The student will learn about the different types of electrodes, fluxes and shielding gases used in these processes. Students will be able to weld in all positions, read some basic weld symbols, and have a basic understanding of written welding procedures.

## **10-621-126 GTAW Techniques (2 cr.)**

A study and operation of primarily gas tungsten arc welding on some mild steel, with the majority of work on stainless steel and aluminum. The student will learn about the different types of electrodes and shielding gases used in these processes. Students will be able to weld in all positions, read some basic weld symbols, and have a basic understanding of written welding procedures.

**10-621-127 Robotic Arc Welding, Basic (2 cr.)**

Provides a survey of multiple robot programs, safety and safety systems, learning maintenance, and program editing. Students will work with robot fixtures using the GMAW process.

**10-621-128 Pipe Welding Techniques (2 cr.)**

Teaches students how to weld pipe using welding processes including GMAW, FCAW and GTAW. The students will be able to interpret a written welding procedure. Emphasis will be placed on ASME Section 9. Upon completion of this course, the student will be able to weld pipe in all positions.

**10-621-129 2D/3D CAD Modeling for Welders (2 cr.)**

Provides instruction and practice in using current computer automated drafting and modeling software. Each student will develop a detailed drawing on the CAD system, complete with weld symbols and a modeled representation of a product design suitable for production.

**10-621-133 Welding Shop Drawings (2 cr.)**

Provides practice in reading shop drawings. Topics include orthographic projection, auxiliary views, revolved sections, surface and centerline relationships, scale drawing and tolerances. The student interprets detailed weld symbols using the American Welding Society standard. The course culminates with each student developing a detail drawing on the CAD system complete with weld symbols.

**10-621-134 Welding NDE, Codes & Testing (3 cr.)**

Provides an overview of welding codes and nondestructive examination (NDE). Covers the study of specific welding code and includes cutting, polishing, and testing weldments per code. NDE focuses on Visual Examination, Liquid Penetrant, Magnetic Particle, and Ultrasonic Testing. Instruction includes both theoretical and hands-on NDE methodology.

**10-621-140 Advanced Welding Processes (2 cr.)**

Covers the advantages and disadvantages of advanced GMAW and GTAW pulsing and waveforms available with modern welding power sources. Students will use the lab to compare standard welding techniques to advanced pulsing or waveforms. Students will develop welding parameters that meet the required structural, cosmetic and/or mechanical specifications.

**10-621-150 Electrical Theory & Maintenance for Welders (3 cr.)**

Covers electrical theory of electrical circuits and components. Students will use this knowledge to design and build relay ladder logic and programmable logic circuits to simulate an automated welding cell. Emphasis is on electrical safety and the use of safety devices in a welding cell. Students will also use their acquired electrical theory knowledge to troubleshoot welding power sources and accessories. Maintenance and care of equipment will be stressed. This knowledge will enable the student to reduce or eliminate future downtime caused by lack of maintenance and failure.

## 623 Manufacturing Operations

**10-623-100 Fundamentals of SPC (2 cr.)**

Introduces basic statistical tools and fundamental concepts needed to improve and control processes. Topics include the definition of statistics, the meaning of statistical process control, defining problems and setting priorities, predicting outcomes and estimating populations, and determining problem causes.

**10-623-101 Engineering Internship - 3 Cr (3 cr.)**

Incorporates having the student work a typical 40-hour work week as support in an engineering office at a local employer. The position will provide support in engineering-related areas of study. The student will be evaluated by the employer who will provide the final grade.

**10-623-102 Engineering Internship - 2 Cr (2 cr.)**

Incorporates having the student work on a special project in an engineering office at a local employer. The position will provide support to the project and provide a final report on the project status or completion.

**10-623-103 IE/ME Production Engineering (3 cr.)**

Provides an overview of the functions of industrial and manufacturing engineering, stressing the importance of a systems approach in achieving operational excellence.

**10-623-104 IE/ME Engineering Economics (3 cr.)**

Presents various techniques for analyzing economic differences between engineering design alternatives, focusing on the time value of money and cash flows. Also includes overview of capital budgeting, manufacturing cost structure, and financial statements.

# Course Descriptions

## **10-623-106 Interpretation of Engineering Drawings (2 cr.)**

Teaches students how to visualize a three-dimensional part from a drawing, interpret dimensions and tolerances, identify symbols commonly used in engineering drawings, and use engineering drawings for comparison, analysis and problem-solving purposes.

## **10-623-107 IE/ME-Work Measurement (3 cr.)**

Helps the learner to develop skills in designing work stations, developing better work methods, establishing work standards, balancing assembly lines, and estimating labor costs. The time study techniques the learner will use include predetermined time standard systems, stopwatch, and work sampling.

## **10-623-112 IE/ME-Facility Planning & Material Handling (3 cr.)**

Provides students with practical means to use data to develop and improve plant and facility layouts and improve material handling methods that will yield higher production, lower costs, and/or improve the quality and customer service.

## **10-623-113 Lean Implementation (4 cr.)**

Focuses on the implementation of Lean philosophy and the facilitation of Lean events including Value Stream Mapping, A3 management, Gemba walks, 5S, Kaizen, and other rapid improvement events.

## **10-623-114 Cost Estimating and Budgeting (3 cr.)**

Focuses on manufacturing costs such as labor, materials, tooling and factory services. Students perform a systematic analysis of the manufacturing cycle and apply formulas and standard data. Projects involve different manufacturing processes and require estimating and budget development.

## **10-623-115 Quality Audits (3 cr.)**

Introduces types of and reasons for audits. Students learn how to conduct an internal audit and to describe and apply various auditing tools and techniques such as checklists, interview techniques, record/document review, and tracing.

## **10-623-117 Preventive & Corrective Action (3 cr.)**

Focuses on development of preventive actions using a variety of quality tools to uncover true root causes of problems. Also deals with corrective actions such as nonconforming material identification and review processes.

## **10-623-118 Inspection & Testing (3 cr.)**

Offers the student a practical means to plan and use inspection systems to collect meaningful data to assess and improve the overall approach to meeting customer standards.

## **10-623-119 Manufacturing Processes with Lab (4 cr.)**

Introduces the manufacturing processes used to cast, form, cut, and join materials including hands-on experience with manual machining, forming, and joining processes. Incorporates print reading and basic metrology skills.

## **10-623-120 Computer-Aided Manufacturing (4 cr.)**

Provides students with the opportunity to design, program, and produce manufactured parts using computer-aided design and manufacturing software and computer numerically controlled (CNC) machines. Also explores additional computer applications in manufacturing.

## **10-623-121 Engineering Materials (3 cr.)**

Discusses the relationship between the properties and processes of various materials, including metals, ceramics, polymers, and composites. Emphasis is on the fundamentals of selecting materials based on engineering design criteria.

## **10-623-122 Introduction to Materials Management (3 cr.)**

Explores the basic concepts in managing the complete flow of materials in a supply chain along with a complete overview of material flow from internal and external suppliers to and from organizations. This is a self-paced, independent study course. After the first session, students set their own attendance and study schedule.

## **10-623-122D3 APICS CSCP-Cert. Supply Chain Professional (3 cr.)**

Is a 54-hour course designed for people preparing to take the APICS Certified Supply Chain Professional (CSCP) examination. In addition to a thorough review of the scope of the exam, a practice examination, test-taking tips, and information on registration procedures are presented.

## **10-623-128 Lean Six Sigma Fundamentals (1 cr.)**

Explores the fundamental concepts and tools of Lean Six Sigma and their application to the pursuit of organizational excellence through the reduction of variation and waste.

## **10-623-132 Project Management (3 cr.)**

Offers a systematic approach to coordinating, scheduling, and controlling activities, people, and resources during short-term and long-term projects. Some of the tools presented include Work Breakdown Structures, Activity Diagrams, and Gantt Charts.



**10-623-148 Manufacturing Processes (3 cr.)**

Presents a comprehensive overview of the fundamental manufacturing process families. Learners focus first on how the processes move from a primary process of operation to the secondary process; then examine the tools and tooling used in manufacturing, forming, and casting techniques and their application, as well as material removal processes.

**10-623-150 Quality Concepts (3 cr.)**

Introduces ISO 9000, which is an international quality standard that helps define and document their own quality procedures for production and/or services. Learners will explore the path to an ISO quality system, including the benefits of an ISO quality system, documentation standards, project planning and quality policies.

**10-623-155 Transformational Leadership (3 cr.)**

Explores the fundamental truths of good leadership that have stood the test of time. Learners use these fundamentals to develop their leadership skills to see how they can make a difference.

**10-623-163 QAT-Metrology (3 cr.)**

Focuses on the science of weights and measures through description, selection and understanding of the use of and evaluation of measurement results of: hand & optical tools, gauges, coordinate measuring machines, electronic measuring equipment, weights-balances-scales, hardness testing equipment, surface plate equipment, surface analyzers, force measurement, angle measurements.

**10-623-167 QAT-Preventive & Corrective Action (2 cr.)**

Teaches students Continuous Improvement Techniques to determine and select areas for improvement using various quality tools; Nonconforming Material Identification to determine conformance status and apply various methods of identifying and segregating nonconforming material. Investigate Root Causes to distinguish between actual and apparent root causes using basic and sophisticated quality tools.

**10-623-169 Designing & Improving Processes (4 cr.)**

Incorporates lean production principles with manufacturing process planning and workstation design. Additional topics include standardized work instructions, Total Productive Maintenance (TPM), mistake-proofing, changeover reduction, ergonomics, root cause analysis, Six Sigma, and quality management.

**10-623-170 Intro to Lean Manufacturing (2 cr.)**

Examines the principles of lean manufacturing, value versus non-value added activities, waste, 5S, value stream mapping, set-up reduction, cellular flow, building a lean culture, total productive maintenance, Kanban systems and value/supply chain management.

**10-623-171 Quality Management (3 cr.)**

Includes supplier quality management and cost of quality concepts.

**10-623-173 Metrology, Inspection & Testing (3 cr.)**

Offers the student a practical means to plan and use inspection systems and measurement equipment to collect meaningful data to assess and improve the overall approach to meeting customer standards. Students will also develop competence in the care and use of various hand measurement tools as well as the implementation of a calibration program.

**10-623-175 Advanced Inspection Techniques (2 cr.)**

Develops in-depth inspection skills utilizing a coordinate measuring machine (CMM) and Geometric Dimensioning and Tolerancing techniques. Also introduces advanced technologies used for inspection and reverse engineering activities.

**10-623-176 Fixtures, Jigs & Tooling (4 cr.)**

Introduces the fixtures, jigs, and tooling commonly used in manufacturing. Topics include workholding concepts, jig & fixture design, inspection gage design, tool materials, modular & automated tooling systems. geometric dimensioning & tolerancing, and die design. Students will use 3D software to produce a variety of designs.

**10-623-183 Statics (3 cr.)**

Introduces the analysis of two- and three-dimensional force systems applying the principles of equilibrium. Topics include: free body diagrams, vector analysis, force and moment resultants, friction, centroids, and moments of inertia.

**10-623-184 Mechanics of Materials (3 cr.)**

Introduces the internal response of structural members to applied forces. Topics include: stress, strain, torsion, shear and bending moments, combined stresses, and thermal stress and strain.

**10-623-191 Lean Events (3 cr.)**

Introduces the culture and outlines the characteristics of an organization that has embraced lean principles. Provides details of planning and facilitating process improvement events, including value stream mapping.

# Course Descriptions

## **10-623-194 Introduction to Six Sigma (3 cr.)**

Explores the basic concepts needed to implement a Six Sigma approach in an organization. Major course topics include Six Sigma definition; impact of quality on cost, project selection, and definition; and process performance measures and Six Sigma roles.

## **10-623-195 Lean Tools (2 cr.)**

Introduces useful tools to use when implementing Lean in your organization. Major course topics include team building, lean tools and project management.

## **10-623-196 Statistics for Six Sigma (3 cr.)**

Covers tools needed in the measure, analyze and control phases of Define, Measure, Analyze, Improve and Control. Confidence intervals, hypothesis testing, statistical inferences and measurement system analysis are examples.

## **10-623-197 Advanced Statistical Tools for Six Sigma (3 cr.)**

Covers a variety of tools needed to analyze and improve phases of Define, Measure, Analyze, Improve and Control. Design of experiments, regression analysis and design for Six Sigma are examples.

## **10-623-198 Lean Six Sigma Project Application (4 cr.)**

Covers the final phase of Six Sigma green belt certification. The project must demonstrate the mastery of all phases of the Define, Measure, Analyze, Improve and Control process and completion of a project in the workplace.

## **628 Automated Manufacturing**

### **10-628-101 Concepts of Programming for Technicians (1 cr.)**

Introduces students to programming fundamentals necessary in automation related careers. Students will discuss proper programming structures and components as well as create and troubleshoot programs.

### **10-628-112 Robotics (2 cr.)**

Establishes a firm foundation in industrial robotics. The major electronics and mechanics of common robots are studied. Robot types, typical applications and end-of-arm tooling is presented as well as the programming of pick and place servo robots.

### **10-628-113 Electronic Construction Applications (1 cr.)**

Demonstrates how to lay out, install and mount industrial electronic equipment on electrical panels. Students create wiring diagrams of each electronic device and eventually wire all devices in a cabinet. Quality workmanship and craftsmanship are emphasized.

### **10-628-123 Controls and PLCs (2 cr.)**

Covers the fundamentals of programmable logic controllers (PLCs). This course emphasizes programming, I/O modules, wiring, digital sensors, troubleshooting and operation of PLCs. Students also learn about networking PLCs.

### **10-628-124 Industrial Electronics (2 cr.)**

Emphasizes the application of solid-state devices to industrial applications. Semiconductor theory is followed by diodes, transistors, thyristors and op-amps. Thermistors, photo-sensitive devices and hall effect is included. Solid-state devices applied to power switching is emphasized. Transistor amplifiers and op-amps are applied to drives, servos, sensors and I/O.

### **10-628-125 CAD for Technicians (1 cr.)**

Introduces students to editing and creating CAD drawings utilizing AutoCAD software. Students will learn to draw, edit, dimension and plot drawing.

### **10-628-126 Blueprint Reading, Computer-Assisted Design (2 cr.)**

Focuses on the symbols used on industrial blueprints and introduces computer-assisted design (CAD). Students examine the basic principles, use and application of CAD.

### **10-628-131 Instrumentation and Process Control (3 cr.)**

Examines servo and process control with an emphasis in instrumentation. Students learn to control temperature, level, flow, position and velocity, as well as PID tuning and calibration of systems. The basics of statistical process control are emphasized. Students develop programs and perform control, tuning and calibration.

### **10-628-132 Controls and PLCs 2 (2 cr.)**

Focuses on advanced programming of PLCs as well as analog I/O. Step logic, used to control motor position and control, and vision system programming are covered. Students develop and troubleshoot several vision applications involving inspection of lettering, size, location and electronic circuitry.

### **10-628-133 Visual BASIC for Industrial Applications (2 cr.)**

Introduces computer programming using the Microsoft Visual Basic program. Students design and construct industrial VB programs that are used in industrial applications.

### **10-628-134A Automation Internship - 2 Cr (2 cr.)**

Provides credit for students working in related technologies in industry. Work experience must show diversity in duties and learning opportunities and must relate directly to program content. Prior approval of instructor is required.

**10-628-135 Visual Basic Industrial Advanced (2 cr.)**

Introduces participants to sequential access files, array's, structures, functions, sub procedures and industrial programming.

**10-628-136 Automated Systems Design (2 cr.)**

Provides the student with the parameters under which a system must function. Based upon these parameters, the student will design, build and test a system to satisfy the requirements.

**10-628-138 Operator Input/Output (1 cr.)**

Focuses on programming and integrating color touch screens for I/O and operator information and control. Rockwell Automation SLC's and color touch panels are used.

**10-628-140 Intro to Cell Integration (1 cr.)**

Introduces students to the integration of industrial devices. The course will include labs using industrial safety relays, safety devices, light scanners, vision systems, and industrial communications. Additional emphasis will be placed on project management, team work, budgeting, scheduling, and understanding timelines.

**10-628-141 Cell Integration (3 cr.)**

Focuses on integration of a complete manufacturing cell. Typical components include programmable controllers, robot, sensors, drives, conveyors, pneumatics, hard automation, control wiring and vision. Students plan, wire, program, troubleshoot and develop documentation for the whole system.

**10-628-142 Elements of Machines (2 cr.)**

Emphasizes the mechanical elements of industrial machines. Principles of power transmission, belt drives, pipefitting, seals, bearings, couplings and fasteners are covered. Terminology, selection and proper installation and maintenance are stressed.

**10-628-143 Enterprise Integration (2 cr.)**

Covers enterprise integration and communication. Students learn control and communication networks such as Ethernet, DeviceNet and ControlNet. Students integrate an enterprise from the plant floor devices to the business systems. Wonderware Intouch and RSView are used to develop SCADA applications that utilize SQL into the business systems. Students develop graphical operator, maintenance and management information, and I/O screens.

**10-628-144 Electrical Power Systems (2 cr.)**

Requires students to work with industrial power distribution systems. This course focuses on in-plant distribution of single- and three-phase systems as applied to automated manufacturing systems. Safe working practices are stressed.

**10-628-151 PLC 1 (1 cr.)**

Introduces student to the Allen Bradley SLC-500 PLC platform and hardware configurations. Students will create, organize, edit, download, test, and debug RSLogix500 projects using latches, counters, comparing and forcing concepts. Additionally, students will wire industrial sensors as inputs along with various output devices.

**10-628-152 PLC 2 (1 cr.)**

Introduces students to the ControlLogix PLC platform and hardware configurations. Students will create, organize, edit, download, test, and debug RSLogix5000 projects using bit operations, timers, and counters. Additionally, students will wire industrial sensors as inputs along with various output devices.

**10-628-153 PLC 3 (1 cr.)**

Introduces advanced programming and configuration of the ControlLogix Programmable Automation Controllers. Students create ladder programs using bit, math, logic, comparison, and file instructions with both digital and analog inputs and outputs.

**10-628-154 PLC 4 (1 cr.)**

Introduces the IEC 61131-3 compatible languages within ControlLogix Programmable Automation Controllers. Students are introduced to Structured Text (ST), Sequential Function Charts (SFC), and Function Block Diagrams (FBD). Additionally, students learn advanced I/O configuration and data communications.

**10-628-155 PLC 5 (1 cr.)**

Introduces motion programming within the ControlLogix Programmable Automation Controllers. Students will configure, tune, program, and troubleshoot a complete motion control system. The course will cover homing, moving, jogging, and coordinated axis instructions of a motion device.

# Course Descriptions

## **10-628-157 Advanced Industrial Applications (2 cr.)**

This course has two main topic areas: PLC and HMI machine applications. The student will demonstrate the ability to learn to program a PLC they have not worked with before as well as an HMI they have not worked with before. The student will integrate some lecture, the study of curriculum, technical manuals, help files and previous knowledge to demonstrate their ability to learn new technology. The student will develop several PLC applications and several HMI applications integrated with the PLC.

## **10-628-159 Operator Interfaces (1 cr.)**

Focuses on programming and integrating color touch screens for I/O and operator information and control. Rockwell ControlLogix PLC's and touch panels are used.

## **10-628-161 Robotics 1 (1 cr.)**

Emphasizes advanced programming techniques for industrial robots. Topics include I/O, routines, decision making, math operations, position offsets, and operator communications. Students program hands-on with industrial robotic equipment widely used in the automation field.

## **10-628-162 Robotics 2 (1 cr.)**

Emphasizes advanced programming techniques for industrial robots. Topics include I/O, routines, decision making, math operations, position offsets, and operator communications. Students program hands-on with industrial robotic equipment widely used in the automation field.

## **10-628-171 Instrumentation & Process Control 1 (1 cr.)**

Introduces student to the concepts Open Loop vs. Closed Loop control. Students will learn about On/Off control and the effects of dead band. Students are also introduced to the common manufacturing processes which include Batch Separation, Continuous, Polymerization, Mixing/Blending, Product Composition, Chemical Reaction.

## **10-628-172 Instrumentation & Process Control 2 (1 cr.)**

Introduces students to Proportional Control using Proportional Band or Proportional Gain. Calibration procedures for adjusting and correcting transmitter output signals is also introduced. Students will learn how to interpret Piping and Instrumentation Diagrams (P&IDs).

## **10-628-173 Instrumentation & Process Control 3 (1 cr.)**

Teaches students to work with Programmable Logic Controller (PLC) based Proportional Integral and Derivative (PID) Control Blocks. PID is a common closed-loop industrial control method used to automatically control processes. Some of the common industrial processes include flow, level, and temperature control. Utilizing various tuning methods, students will set up and tune PID loops.

## **10-628-176 Enterprise Integration 1 (1 cr.)**

Introduces students to PC based Human Machine Interface (HMI) development. The course uses Wonderware as a platform to design and develop the various components in most HMIs. Components include Basic Objects, Animations, Scripting, Alarms, Trending, and Security.

## **10-628-177 Enterprise Integration 2 (1 cr.)**

Introduces students to PC based Human Machine Interface (HMI) development. The course uses FactoryTalk Site Edition (SE) as a platform to design and develop the various components in most HMIs. Components include Basic Objects, Animations, Macros, Global Objects, Recipes, Local Messages, Alarms, Trending, and Security.

## **10-628-180 Computer Systems (2 cr.)**

Introduces students to computer systems, including computer hardware, operating systems, and networking fundamentals. Students will become familiar with the overall computing process, troubleshooting and repairing PC related issues.

## **10-628-181 Visual Basic Programming 1 (1 cr.)**

Introduces students to computer programming using the Microsoft Visual Basic software. Students will design, construct, and debug VB programs and applications.

## **10-628-182 Visual Basic Programming 2 (1 cr.)**

Introduces students to advanced computer programming using Microsoft Visual Basic software. Students will design, construct, and debug VB program and applications.

## **10-628-183 Visual Basic Programming (3 cr.)**

Introduces students to computer programming using the Microsoft Visual Basic software. Students will design, construct, and debut VB programs and applications.

## **10-628-187 AutoCAD Fundamentals (1 cr.)**

Introduces students to creating and editing CAD drawings utilizing AutoCAD software. Students will learn to draw, edit, dimension, and plot drawings.

**10-628-188 Blueprint Reading & AutoCAD (1 cr.)**

Introduces students to reading both electrical schematics and mechanical prints, while utilizing the AutoCAD software.

**660 Electronics Foundation****10-660-110 DC Circuits 1 (1 cr.)**

Introduces electrical safety and program procedures. The course covers Ohm's Law, power law, series circuits, and voltmeter, ammeter and ohmmeter applications. Number powers, electronic notations, circuit component recognition and diagrams, resistor power ratings, color code, Kirchhoff's voltage law and atomic structure are also included.

**10-660-111 DC Circuits 2 (1 cr.)**

Covers basic parallel and series-parallel circuits and their properties. Examines the theory, application and design of series-parallel circuits, such as loaded and unloaded voltage dividers and the Wheatstone bridge. Laboratory activities are performed to verify the theory.

**10-660-112 DC Circuits 3 (1 cr.)**

Covers capacitors and inductors including time constants and instantaneous voltage and current values of RC and RL circuits. Applications and various types of capacitors and inductors are discussed. Magnetism, electromagnetism, and devices, such as relays and solenoids, are also presented. Laboratory activities are performed to verify the theory.

**10-660-114 AC Circuits 1 (1 cr.)**

Covers AC waveforms and different voltage values including Peak, RMS, Average and Peak to Peak. The operation of transformers is also included. Laboratory activities using the oscilloscope are performed to verify the theory.

**10-660-115 AC Circuits 2 (1 cr.)**

Covers reactive properties of series and parallel RC, RL and RLC circuits. Topics include reactance, phase angle and fundamental AC power concepts such as power triangle and power factor. Circuit quantities are determined using triangular analysis. Laboratory activities are performed to verify the theory.

**10-660-120 Solid State 1 (1 cr.)**

Introduces semiconductor materials, the operation of diodes, Zener diodes and the construction of rectifier and filter circuits. Laboratory experiments are performed to verify the theory.

**10-660-121 Solid State 2 (1 cr.)**

Examines the operation and theory of transistors and the construction of amplifiers. Laboratory experiments are performed to verify the theory.

**10-660-128 Semiconductors 1 (1 cr.)**

Introduces semiconductor materials, the operation of diodes, Zener diodes and the construction of rectifier and filter circuits. Fundamental transistor construction and operation is also introduced. Laboratory experiments are performed to verify the theory.

**10-660-129 Semiconductors 2 (1 cr.)**

Introduces students to transistor operation as a switch, SCR, Triac, and Operational Amplifier operation and application.

**10-660-130 Digital Electronics Tech 1 (1 cr.)**

Introduces digital electronics, the operation of logic gates, and the theory of combination logic devices such as encoders, decoders, multiplexers, binary adders and parity circuits. Laboratory activities are performed to verify the theory.

**10-660-131 Digital Electronics Tech 2 (1 cr.)**

Examines flip-flops, various types of shift registers and counters, arithmetic circuits, and practical application digital devices. Laboratory activities are performed to verify the theory.

**10-660-150 Networking-Ethernet (1 cr.)**

Explores Ethernet network architectures, media, protocols, and security, and their application in industry today.

**10-660-151 Embedded Programming 1 (1 cr.)**

Introduces students to embedded computer systems through exploration of microcontroller operation, architecture and programming. Students will lay the groundwork for future courses and electronic projects while experimenting with programming language concepts and basic interfacing.

**10-660-163 Construction Techniques (1 cr.)**

Introduces the use of common hand tools used by technicians. The safe use and application of hand and power tools is practiced through construction projects. Quality workmanship and craftsmanship are emphasized.

# Course Descriptions

## **10-660-170 Ladder Logic & Control Devices (1 cr.)**

Introduces ladder logic diagrams used to document power control networks. Discrete industrial devices are also studied including switches, contactors, relays, timers, and motor starters. Students will design, construct, and troubleshoot ladder logic circuitry following safe working procedures. Memory addressing schemes and PLC hardware of an Allen-Bradley SLC-500 is introduced. Students taking this course should have a working knowledge of DC and AC circuits.

## **10-660-180 Computer Hardware & Assembly (1 cr.)**

Introduces hardware components located on the inside of a computer. Students develop an understanding of how the components relate to each other. They will assemble a PC and install necessary drivers and operating system to make the PC operational.

## **10-660-181 Technical Software Essentials (1 cr.)**

Introduces students to the Microsoft Office family of products. Students will create and edit Word documents, Excel spreadsheets, and Access databases.

## **10-660-183 PC Hardware/OS (1 cr.)**

Trains students to work with a critical tool for technicians and become familiar with computer repair (A+ Prep). Students will experience all through hands-on laboratory activities. They will also learn to understand fundamental computer hardware, operating systems, configuration, and troubleshooting.

## **10-660-184 Computer Systems (1 cr.)**

Introduces students to Windows operating systems and computer hardware. Students will learn through hands-on lab activities covering operating systems, computer hardware, configurations, and troubleshooting techniques.

## **10-660-185 Computer Systems & Networks (1 cr.)**

Introduces students to advanced Windows Operating System settings and computer hardware while integrating Ethernet networking communications, architectures, protocols, and security. Students will learn through hands-on lab activities covering operating systems, computer hardware, networking configurations, and troubleshooting techniques.

## **662 Electrical Engineering Technology**

### **10-662-112 Advanced Circuit Analysis 1 (3 cr.)**

Explores ideal transformers, mesh and nodal analysis, Thevenin's and Norton's theorems, power transfer and delta-wye. Laboratory experiments illustrate the principles presented and computer software is used in report preparation.

### **10-662-124 Advanced Circuit Analysis 2 (3 cr.)**

Focuses on circuit analysis with frequency as a variable, Bode plots of circuit responses, resonant circuits, semiconductors, various pn junction diodes and diode circuit applications. Laboratory activities are performed to verify the theory.

## **699 Technical Communications**

### **10-699-102 Intercultural Communication (3 cr.)**

Sensitizes students to the needs and expectations of people of other cultures and introduces skills necessary for effective intercultural communication. Topics include appropriate verbal and nonverbal communication, written communication patterns, business and social etiquette, and intercultural negotiation strategies. Students will also examine universal systems, cultural values and problems associated with language diversity.

### **10-699-104 Research Methods for Professional Communications (3 cr.)**

Introduces students to the research phases of professional research and product testing. Students will learn how to conduct and analyze quantitative and qualitative studies, conduct surveys and develop and implement proper usability testing.

### **10-699-105 Writing Content for the Web (3 cr.)**

Focuses on technical writing strategies and methods of designing and writing for Web sites that support the workplace. Current trends in Search Engine Optimization (SEO) will be introduced.

### **10-699-106 Proposal/Grant Writing (3 cr.)**

Introduces the skills to evaluate, assess and apply appropriate writing principles in writing grants and proposals. Students will complete this class with direct experience in writing a grant.

**10-699-112 Introduction to Professional Communications (3 cr.)**

Provides new students with firm knowledge of the Professional Communications program. Students will explore the careers associated with this field and work on improving technical writing skills. Technical editing and proofreading will be introduced in this course.

**10-699-116 Developing Product Documentation (3 cr.)**

Focuses on the preparation of various types of manuals—procedural and instructional. Skills addressed include layout and design, collaboration and project management.

**10-699-117 Designing Content for the Web (3 cr.)**

Focuses on design and delivery of professional quality Web content. Students will learn to incorporate usability in Web page design, terminology, appropriate document file formats and incorporate optimized graphic images.

**10-699-120 Information Design (3 cr.)**

Prepares students to design and manage information using a variety of methods—instructional design strategies, performance support system software and information systems theories. Students will be required to use project management techniques in order to create a simple training session for online delivery and develop a support system using RoboHelp.

**10-699-121 Introduction to Social Media (1 cr.)**

Introduces social media, such as Facebook, Twitter, LinkedIn and other new media, as used by professional communicators. This 9-week course will stress how to integrate social media for business purposes.

**10-699-122 Publishing Content for Mobile Devices (1 cr.)**

Introduces electronic publishing of ePublications as used by professional communicators. This 9-week course will focus on how to publish content in the ePub format to electronic mobile devices such as the iPad, smart phone, and Nook. Publishing content to the Kindle will also be discussed.

**10-699-123 Video Publishing (1 cr.)**

Introduces video development and publishing as used by professional communicators. This 9-week course will stress how to integrate video in documentation and websites for business purposes.

**10-699-141 Professional Communications Internship (3 cr.)**

Provides the fourth semester student with on-the-job experience related to professional communications. Students will be assigned appropriate workplace projects, will help design assessment criteria for the experience, and will be evaluated by the workplace mentors and the practicum instructor after completing a self-assessment of the work during this experience.

**10-699-142 E-portfolio Development (1 cr.)**

Focuses on the completion of an e-portfolio as a culminating assessment of student progress throughout the program. Students take away an electronic portfolio of their best work that they can use during their professional careers.

## 801 Communication Skills

**10-801-136 English Composition 1 (3 cr.)**

Designed for learners to develop knowledge and skills in all aspects of the writing process. Planning, organizing, writing, editing and revising are applied through a variety of activities. Students will analyze audience and purpose, use elements of research and format documents using standard guidelines. Individuals will develop critical reading skills through analysis of various written documents.

**10-801-195 Written Communication (3 cr.)**

Teaches the writing process which includes prewriting, drafting and revising. Through writing assignments, students analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and content. Class sessions and assignments involve giving oral presentations and using computers.

**10-801-196 Oral/Interpersonal Comm (3 cr.)**

Focuses on developing various communication skills including speaking and listening. Students practice intrapersonal/interpersonal and nonverbal communication skills through oral presentations, group activities and written projects.

**10-801-196E Oral/Interpersonal Comm - Auto (3 cr.)**

Focuses on developing various communication skills including speaking and listening. Students practice intrapersonal/interpersonal and nonverbal communication skills through oral presentations, group activities and written projects. For Automotive students.

# Course Descriptions

## **10-801-197 Technical Reporting (3 cr.)**

Focuses on the preparation and presentation of a variety of oral and written technical reports. This course is designed as an advanced communication course for students who have completed at least the prerequisite writing course and a minimum of two semesters of relevant program course work.

## **10-801-198 Speech (3 cr.)**

Covers the fundamentals of oral presentation, topic selection, audience analysis, speech organization, research, evidence and support, delivery, evaluation, listening and group problem solving.

## **31-801-318 Communication, Applied (2 cr.)**

Focuses on technical vocabulary, business writing, job search strategies, interpersonal communication and oral presentation skills through individual and group activities. It is recommended that the student have basic computer skills, an ACCUPLACER Reading score of 54 or greater and an ACCUPLACER Sentence Skills score of 83 or greater or completion of equivalent Program Prep courses. Personal/professional development students who have not taken the ACCUPLACER test need to consult with their instructor during the first class.

## **31-801-318F FABTECH Applied Communication (2 cr.)**

Focuses on technical vocabulary, business writing, job search strategies, interpersonal communication and oral presentation skills through individual and group activities. It is recommended that the student have basic computer skills, an ACCUPLACER Reading score of 54 or greater and an ACCUPLACER Sentence Skills score of 83 or greater or completion of equivalent GOAL courses. Personal/professional development students who have not taken the ACCUPLACER test need to consult with their instructor during the first class. This course is for FABTECH students and focuses on FABTECH communications.

## **31-801-320 Essential Workplace Communication (3 cr.)**

Provides fundamental communication skills required in the workplace including telephone, email and social media etiquette; listening; asking questions; clarifying; providing information; interpreting non-verbal cues; and understanding interpersonal conversations.

## **802 Foreign Language**

### **10-802-100 Spanish 1 (3 cr.)**

Presents an introductory approach to conversation using everyday work and social situations. This course provides students with the basic vocabulary, grammar, and cultural understanding needed for interacting with Spanish speakers at home and abroad.

### **10-802-101 Spanish 2 (3 cr.)**

Enables students to advance their conversational skills in realistic work and social environments while further developing cross-cultural insights needed for successful interactions with Spanish-speaking people both at home and abroad.

### **10-802-102 Spanish 3 (3 cr.)**

In this continuation of Spanish 2, students develop additional communicative and written skills in real-life situations and gain a better understanding of the Spanish-speaking cultures of the world in relationship to their own.

### **10-802-103 Spanish 4 (3 cr.)**

As a continuation of Spanish 3, students will continue to increase vocabulary, refine communicative skills, and further study cultural topics. Principles of grammar are systematically reviewed focusing on the use of the present, past and future tenses.

### **10-802-991 Elective: Choice of Foreign Language (9 cr.)**

Choice of Foreign Language such as: Arabic, Chinese, English, French, German, Hmong, Italian, Japanese, Polish, Portuguese, Russian, Spanish

## **804 Mathematics**

### **10-804-107 College Mathematics (3 cr.)**

Designed to review and develop fundamental concepts of mathematics in the areas of algebra, geometry, trigonometry, measurement and data. Special emphasis is placed on problem solving, critical thinking and logical reasoning, making connections, and using calculators.

### **10-804-113 College Technical Math 1A (3 cr.)**

Included topics are solving linear equations; graphing; percent; proportions; measurement systems; computational geometry; and right triangle trigonometry. Emphasis will be on the application of skills to technical problems. Successful completion of College Technical Math 1A and College Technical Math 1B is the equivalent of College Technical Math 1.



**10-804-114 College Technical Math 1B (2 cr.)**

Continuation of College Technical Mathematics 1A. Topics include: performing operations on polynomials; solving quadratic and rational equations; formula rearrangement; solving systems of equations; and oblique triangle trigonometry. Emphasis will be on the application of skills to technical problems. Successful completion of College Technical Math 1A and College Technical Math 1B is the equivalent of College Technical Math 1.

**10-804-115 College Technical Math 1 (5 cr.)**

Includes solving linear, quadratic, and rational equations; graphing; formula rearrangement; solving systems of equations; percents; proportions; measurement systems; computational geometry; right and oblique triangle trigonometry; trigonometric functions on the unit circle; and operations on polynomials. Emphasis will be on the application of skills to technical problems. This course is the equivalent of successful completion of College Technical Math 1A and College Technical Math 1B.

**10-804-116 College Technical Math 2 (4 cr.)**

Included topics are vectors; trigonometric functions and their graphs; identities; exponential and logarithmic functions and equations; radical equations; equations with rational exponents; dimension of a circle; velocity; sine and cosine graphs; complex numbers in polar and rectangular form; trigonometric equations; conic sections; and analysis of statistical data. Emphasis will be on the application of skills to technical problems.

**10-804-117 Math for Natural Resources Common Topics (2 cr.)**

Includes real numbers, linear equations, rate, ratio, proportion, percent, measurement systems, computational geometry and right-triangle trigonometry. Emphasis is on applied problems from the field of natural resources (surveying, water treatment, forestry, plant and wild life management).

**10-804-119 Technical Calculus 2 (4 cr.)**

Develop techniques for differentiation and integration of transcendental functions. Use the derivative and the integral to solve certain applied problems. Extend calculus techniques to curves in polar coordinates and three-dimensional surfaces. Form basic understanding of infinite series and associated applications.

**10-804-120 Technical Calculus 1 (4 cr.)**

This course is an introduction to differential and integral calculus with analytic geometry, with an emphasis on applications. Topics to be covered include: techniques for curve sketching, conic sections and the general second degree equation, differentiation of algebraic functions, applications of the derivative, integration of algebraic functions, and applications of the integral.

**10-804-123 Math w Business Apps (3 cr.)**

Covers real numbers, basic operations, linear equations, proportions with one variable, percents, simple interest, compound interest, annuities, applying math concepts to the purchasing/buying process, applying math concepts to the selling process, and basic statistics with business/consumer applications.

**10-804-124 Math for Laboratory Science (3 cr.)**

Provides a basic math review of mathematical tools used in laboratory work including exponents, scientific notation, logarithms, units of measurement and equations including unit conversions. This course also provides instruction in the use of proportional relationships to solve a variety of practical laboratory calculation problems, dilution calculations used in chemical and microbiologic laboratory work and graphical methods of data analysis including linear and exponential relationships. This course also provides instruction in laboratory statistics including variance, standard deviation, coefficient of variation and methods of displaying statistical values.

**10-804-133 Math & Logic (3 cr.)**

Students will apply mathematical problem solving techniques. Topics will include symbolic logic, sets, algebra, Boolean algebra, and number bases.

**10-804-181 Calculus 2 (4 cr.)**

Continues the study of analytic geometry and calculus. Topics included in this course are l'Hôpital's rule, applications of Integration, differentiation and integration of transcendental functions, various techniques of integration, Infinite Sequences and Series, conic sections, polar cylindrical and spherical coordinates, and multiple integration.

**10-804-189 Introductory Statistics (3 cr.)**

Teaches students to display data with graphics, describe distributions with numbers, perform correlation and regression analyses, and design experiments. Students use probability and distributions to make predictions, estimate parameters and test hypotheses. They also draw inferences about relationships including ANOVA.

# Course Descriptions

## **10-804-197 College Algebra and Trigonometry with Applications (5 cr.)**

This course covers those skills needed for success in Calculus and many application areas on a baccalaureate level. Topics include the real and complex number systems, polynomials, exponents, radicals, solving equations and inequalities (linear and nonlinear), relations and functions, systems of equations and inequalities (linear and nonlinear), matrices, graphing, conic sections, sequences and series, combinatorics, and the binomial theorem.

## **10-804-198 Calculus 1 (4 cr.)**

Focuses on analyzing and graphing algebraic expressions, especially conic sections. Students develop an intuitive understanding of limits, derivatives and integrals. They apply the derivative and the integral to certain physical problems.

## **31-804-307 Math for the Trades (2 cr.)**

Focuses on the math skills needed for various trades. Topics include arithmetic fundamentals, percent and proportion applications, the metric system, conversions, practical geometry, measurement applications, signed numbers and formula evaluation. Micrometer, equation solving and standard rule measurement units are included as needed. Scientific calculator use is introduced as needed.

## **31-804-308 Industrial Maintenance Math (2 cr.)**

Focuses on a wide range of calculation skills using a scientific calculator with an algebraic-entry method. Topics include elementary calculator operations, scientific notation, formula evaluation, measurement systems, rules of estimation and right trigonometry.

## **31-804-310 Essential Workplace Math (3 cr.)**

Prepares learner to engage in financial transactions including comparing costs and making change, calculate percentages, and create and use budgets.

## **806 Natural Science**

### **10-806-103 Independent Study - Science Department (1 cr.)**

Provides individually designed course work to upgrade transfer credit and student skills equal to FVTC courses. The student receives a timeline, topics, assignments and assessment strategies from a faculty member. The instructor and the student sign the agreed upon course document. This course requires approval from the dean for credit.

## **10-806-112 Principles of Sustainability (3 cr.)**

Prepares the student to develop sustainable literacy; analyze interconnections between physical and biological science, and environmental systems; summarize the effects of sustainability; analyze connections among social, economic and environmental systems; employ energy conservation strategies to reduce use of fossil fuels; investigate alternative energy option; evaluate options for waste disposal and recycling; and analyze approaches used to promote and implement sustainability.

## **10-806-114 General Biology (4 cr.)**

Introduces general biological concepts and principles. Emphasis is on cell structure and function, genetics, evolution and taxonomical relationships. Consideration is also given to diversity among the various kingdoms. This course emphasizes an environmental perspective and is suitable for students in Natural Resources, Early Childhood Education, Laboratory Science, Forensic Science and others interested in environmental biology.

## **10-806-120 Laboratory Methods for Forensic Science (1 cr.)**

Introduces scientific methods used in a laboratory. Emphasis is on general laboratory safety and specific precautions for working safely with chemical or biological materials. Proper techniques in documentation will be practiced. The learner will become familiar with identification of laboratory equipment and become proficient at laboratory measurements.

## **10-806-134 General Chemistry (4 cr.)**

Covers inorganic chemistry and basic organic chemistry. Topics include metrics, problem solving, atomic structure, chemical reactions, solutions and concentrations, ionization, pH and organic compounds.

## **10-806-139 Survey of Physics (3 cr.)**

Emphasizes understanding basic physics concepts through laboratory investigation and applications. Topics include kinematics, dynamics, work, energy, power, temperature, heat, waves, electricity, magnetism, electromagnetic waves, optics, and atomic and nuclear physics.

## **10-806-143 College Physics 1 (3 cr.)**

Presents the applications and theory of basic physics principles. This course emphasizes problem solving, laboratory investigation and applications. Topics include laboratory safety, unit conversion and analysis, kinematics, dynamics, work, energy, power, temperature and heat.

**10-806-144 College Physics 2 (3 cr.)**

Presents the applications and theory of basic physics principles. This course emphasizes problem solving, laboratory investigation and applications. Topics include periodic motion, wave motion, optics, magnetism, static electricity, DC electricity, AC electricity and electromagnetism.

**10-806-173 Applied Science for Transportation (1 cr.)**

Engages students in hands-on activities relating the science principles involved with technical measurement, heating and cooling, fluid properties, electricity, and mechanical advantage to applications in the transportation industry.

**10-806-175 Science Principles for Transportation (3 cr.)**

Introduces the physics principles involved with technical measurement, force application, fluid properties, heat and electricity. Emphasizes problem-solving skills, teamwork and the application of scientific principles in the transportation industry.

**10-806-176 DNA Science (4 cr.)**

Includes instruction in DNA structure and function as well as application of DNA science to laboratory testing. Students will learn the basic tools and techniques used in the DNA laboratory including DNA restriction analysis, purification and identification of DNA and basic PCR techniques used in many laboratories.

**10-806-177 Gen Anatomy & Physiology (4 cr.)**

Examines basic concepts of human anatomy and physiology as they relate to health sciences. Using a body systems approach, the course emphasizes the interrelationships between structure and function at the gross and microscopic levels of organization of the entire human body. It is intended to prepare health care professionals who need to apply basic concepts of whole body anatomy and physiology to informed decision-making and professional communication with colleagues and patients. (This course also provides the foundation, and is prerequisite to, Advanced Anatomy and Physiology.)

**10-806-179 Adv Anatomy & Physiology (4 cr.)**

Examines human anatomy and physiology using a body systems approach with emphasis on interrelationships between form and function at the gross and microscopic levels of organization. Lab experimentation includes analysis of cellular metabolism and individual components of body systems (nervous, neuro-muscular, cardiovascular, and urinary). Continued examination of homeostatic mechanisms and their relationship to fluid, electrolyte, acid-base balance and blood; and integration of genetics to human reproduction and development are also included in this course.

**10-806-186 Intro to Biochemistry (4 cr.)**

Provides students with skills and knowledge of organic and biological chemistry necessary for application within Nursing and other Allied Health careers. Emphasis is on recognizing the structure, physical properties and chemical reactions of organic molecules, body fluids, and acids. Additional emphasis is placed on biological functions and their relationships to enzymes, proteins, lipids, carbohydrates and DNA.

**10-806-189 Basic Anatomy (3 cr.)**

Examines concepts of anatomy and physiology as they relate to health careers. Learners correlate anatomical and physiological terminology to all body systems.

**10-806-197 Microbiology (4 cr.)**

Examines microbial structure, metabolism, genetics, growth, and the relationship between humans and microorganisms. Addresses disease production, epidemiology, host defense mechanisms and the medical impact of microbes. Examines the role of microbes in the environment, industry and biotechnology. Students have the following flexible lecture options: in-class, Webcast, podcast or Interactive Television.

**10-806-198 Human Biology (4 cr.)**

Emphasizes the structure of the human body and the functional interrelationships of the body's systems. Consideration is given to the human body and disease, human genetics, human ecology, and the role that humans play in the environment. This course is appropriate for AODA students.

## 809 Social Science

**10-809-103 Think Critically & Creatively (3 cr.)**

Provides instruction in the vital, realistic and practical methods of thinking which are in high demand in all occupations of substance today. Decision making, problem solving, detailed analysis of ideas, troubleshooting, argumentation, persuasion, creativity, setting goals and objectives, and more are considered in-depth as the student applies specific thinking strategies and tools to situations in a wide variety of workplace, personal, academic and cultural situations.

**10-809-110 Leadership as an Art (3 cr.)**

Focuses on the development of leadership abilities. Students create a personal philosophy of leadership and discuss moral and ethical responsibilities. Through study and observation of great leaders plus hands-on activities, students develop fundamental concepts of leadership.

# Course Descriptions

## **10-809-159 Abnormal Psychology (3 cr.)**

Focuses on a broad description of psychological disorders such as psychosis, neurosis and personality problems. It is geared toward an understanding of the deeper level forces and adjustment problems that create mental and emotional stress. Students prepare to recognize and deal with persons with mental dysfunctions.

## **10-809-166 Intro to Ethics: Theory & App (3 cr.)**

Provides a basic understanding of ethical theories and uses diverse ethical perspectives to analyze and compare relevant issues. Students will critically evaluate individual, social and/or professional standards of behavior and apply a systematic decision-making process to these situations.

## **10-809-172 Introduction to Diversity Studies (3 cr.)**

Develops workplace skills needed to work with diverse groups of people. Ethnic relations are studied in global and comparative perspectives. Students examine their biases and gain awareness of differences and common ground shared. The course emphasizes how personal and cultural diversity enhances the effectiveness of work groups.

## **10-809-188 Developmental Psychology (3 cr.)**

Studies human development across the lifespan from conception through old age and death. It focuses on the physical, intellectual, social, emotional and moral development of a person and presents the normal range of responses, reactions and behaviors of age-related development. It also helps students to distinguish what might be considered dysfunctional.

## **10-809-195 Economics (3 cr.)**

Provides a foundation of economic concepts and institutions so that students can apply economic thinking to their own decisions as consumers, employees and citizens in a market-oriented economic system. Topics include supply and demand, employment, prices and production, fiscal policy, monetary policy, market structures, and international trade and finance.

## **10-809-196 Intro to Sociology (3 cr.)**

Focuses on the basic concepts of the intercultural discipline of sociology. Emphasis is placed on culture, socialization and social stratification. The course also looks at five institutions: family, politics, economics, religion and education. Additional topics include demography, deviance, technology, environmental social issues, and social change and organization.

## **10-809-197 Contemporary Amer Society (3 cr.)**

Analyzes public policy issues relating to government, media, education, family and the workplace. This course also looks at the impact of global, multicultural and technological trends on American life and explores these issues by using critical thinking skills, advocating points of view, and participating in political processes.

## **10-809-198 Intro to Psychology (3 cr.)**

Focuses on the theoretical foundation of human functioning and looks at learning, motivation, emotions, personality, deviance and pathology, physiological factors and social influences. Students consider the complexities of human relationships in personal, social and vocational settings.

## **10-809-199 Psychology of Human Relations (3 cr.)**

Explores the relationship between the general principles of psychology and people's everyday lives. Students seek a deepened sense of awareness of themselves and others, and to improve their relationships at work, in the family and in society.

## **10-809-199E Psychology of Human Relations - Auto (3 cr.)**

Explores the relationship between the general principles of psychology and our everyday lives. Students are given the opportunity to achieve a deepened sense of awareness of themselves and others. This understanding enables students to improve their relationships with others at work, in the family, and in society. This is for Automotive program students only.

## **31-809-300 Human Relations (2 cr.)**

Explores practical applications of issues in psychology and human behavior that affect a person's daily life. The objective is to enhance the student's quality of life by developing an awareness of the connection between his/her personal life and work life. This course is intended for technical diploma students.

## **31-809-304 Workplace Diversity (2 cr.)**

Develops basic skills needed to work with diverse groups of people in the workplace.

## 861 ELL (GOAL)

### **10-861-105 English American Language and Culture: Part 1 (3 cr.)**

During this class you will be working on the skills that promote stronger language abilities, i.e. speaking, listening, reading and writing. In addition, you will also be strengthening the skills needed to be a successful university student, i.e. note-taking, critical thinking and classroom participation. The course also provides an opportunity to explore American Culture through Multi Media (film, television, periodicals and music). We will be discussing class, race, education and gender roles in society. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

### **10-861-106 English American Language and Culture: Part 2 (3 cr.)**

During this class you will be working on the skills that promote advanced language abilities, i.e. speaking, listening, reading and writing. In addition, you will also be strengthening the skills needed to be a successful university student, i.e. note-taking, critical thinking and classroom participation. The course also provides an opportunity to explore American Culture through Multi Media (film, television, periodicals and music). We will be discussing class, race, education and gender roles in society. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

### **10-861-107 English for American Business (3 cr.)**

Provides comprehensive language training focusing on expanding American Business English vocabulary and the general knowledge of the American Business and entrepreneurship culture necessary for English language learners to prepare for college-level business and marketing programs. The emphasis is on the improvement of reading American business texts and other materials, the expansion of business and professional vocabulary, and the development of professional and business writing. The participation in field trips to local businesses will allow learners to test their language skills acquired through the coursework. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

### **10-861-109 English Grammar Intermediate (3 cr.)**

Introduce Intermediate- to High Intermediate-level grammar concepts for the Intermediate-level ELL students. Students will learn to analyze and use the grammatical structures of English. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

### **10-861-112 English Grammar Advanced (3 cr.)**

Introduce high-level grammar concepts for the high level ELL students. Students will learn a sophisticated analysis of the grammatical structures of English. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

### **10-861-116 English Listening & Speaking Intermediate (3 cr.)**

Provides comprehensive language training focusing on further developing communication, writing skills and cultural awareness necessary for English language learners to prepare for college-level technical programs. Prepares students from an intermediate to advanced level of language proficiency. Listening and speaking skills as well as study skills will be emphasized. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

### **10-861-118 English Listening & Speaking Advanced (3 cr.)**

Provides comprehensive language training to English language learners while the course instruction focuses on advanced-level listening and speaking skills. Learners will improve their fluency through discussions and debates on a wide variety of topics. This class also trains learners to deepen their critical thinking skills and speaking skills that are essential to success in college-level technical programs. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

### **10-861-121 English Pronunciation Intermediate (3 cr.)**

For those who want to learn English as a foreign language, students will develop and refine pronunciation to help prepare them for academic programs. Designed to improve vowel clarification, consonant reproduction, intonation, stress, blends and reductions. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

# Course Descriptions

## **10-861-122 English Pronunciation Advanced (3 cr.)**

Provides comprehensive language training in advanced academic writing, focusing on further developing communication, writing skills and process, critical thinking skills, and cultural awareness necessary for English language learners to prepare for college-level programs. Prepares students at the advanced level of language proficiency. Grammar as well as writing will be emphasized. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

## **10-861-126 English Reading Intermediate (3 cr.)**

Provides comprehensive language training focusing on further developing communication, writing skills and cultural awareness necessary for English language learners to prepare for college-level technical programs. Prepares students from an intermediate to advanced level of language proficiency. Reading and vocabulary skills as well as study skills will be emphasized. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

## **10-861-127 English Reading Advanced (3 cr.)**

Provides comprehensive language training in advanced academic reading for English language learners to prepare for college-level technical programs focusing on variety of reading comprehension skills, critical thinking, and vocabulary development. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

## **10-861-131 English TOEFL/TOEIC Preparation (3 cr.)**

Familiarizes students with the English language skills, academic skills and testing strategies necessary to prepare them for the TOEFL iBT or TOEIC. Reading, speaking, listening and writing skills are taught in the context of the standardized ELL tests. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

## **10-861-136 English Writing Intermediate (3 cr.)**

Provides comprehensive language training focusing on further developing communication, writing skills and cultural awareness necessary for English language learners to prepare for college-level technical programs. Prepares students from an intermediate to advanced level of language proficiency. Writing and grammar as well as study skills will be emphasized. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

## **10-861-137 English Writing Advanced (3 cr.)**

For those who want to learn English as a foreign language students will develop the tools needed to write academic essays in many rhetorical styles such as comparing, contrasting, describing causes and effects, and analyzing and supporting arguments. Students will also develop and apply strategies for taking an essay exam. In addition, the course introduces how to incorporate paraphrases and quotations from other writers. Finally, students will complete a library research paper. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

## **10-861-153 English Terminology-Introduction to Business (2 cr.)**

Provides linguistic and socio-cultural assistance to ELL students who are in Introduction to Business course, which focuses on the responsibilities connected with operating a business from both organizational and managerial view points and examines the role of government. ELL students learn the language related to a variety of activities in the world of business. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

## **10-861-156 English Terminology-Microsoft Office Suite (2 cr.)**

Provides the review of the terminology related to Word, Excel, Access and PowerPoint. Offered as a bridge course to MS Office Suite Intro, this course introduces the IT language and terms characteristic of the most popular computer business applications required on the job and in all technical college business certificate and AAS programs. Students will develop a dictionary of IT terminology. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

## **10-861-157 English Terminology-Healthcare (2 cr.)**

Provides linguistic assistance to students who are non-native speakers of English so that they can have full comprehension of the classroom and laboratory instruction and supervised clinical practice in local health care institutions. Assists students to complete the course successfully and prepares students for the certification exam at the end of the course. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

**10-861-158 English Terminology-Oral Communication (2 cr.)**

Focuses on developing professional terminology in various communication skills from a language learner perspective, including speaking and listening. In this credit course, students learn to understand cultural differences in intrapersonal/interpersonal and nonverbal communication skills and practice through oral presentations and group activities. Students will complete customized dictionary of communication terms. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

**10-861-161 English Terminology-Written Communication (2 cr.)**

Teaches the writing process from the English as a foreign language perspective, focuses on grammatical and stylistic aspects in prewriting, drafting and revising. In this credit course, students analyze audience and purpose, research and organize ideas and format and design documents based on subject matter and content. Students will complete customized dictionary of written communication terms. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

**10-861-165 English Terminology for Accuplacer Math (1 cr.)**

Prepare English Language Learners (ELL) for the Accuplacer Math Tests used by colleges to place students into appropriate courses. This course provides linguistic assistance to the students to understand a variety of concepts such as basic arithmetic, college-level mathematics and elementary algebraic concepts that are measured on Accuplacer Math Tests. The students will also learn how to take the test and improve their test scores. New students, prior to registration, contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English

**10-861-180 English Language Learning Theories (3 cr.)**

Develops competence of language learning theories. Students are introduced to the history of English as well as being exposed to world English education. The course provides activities to help students develop a foundation of theories and teaching styles. In addition, the course explores classroom management techniques and various learning environments. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

**10-861-181 English Language Learning Methods (3 cr.)**

Develops competence of language learning methodology. This course examines a variety of educational technologies and resources that will bolster learning in student-centered classrooms. Through interactive lessons and activities, students explore successful instructional methods to effectively teach grammar, vocabulary, pronunciation, speaking, listening, reading, and writing as separate or integrated skills. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

**10-861-182 English Learning Practicum (3 cr.)**

Develops competence of language learning instruction. During the practicum, students observe professional instruction in environments such as Intensive English Programs, Adult Education, and Bridge courses. The course also provides a practicum of supervised instruction as well as a private mentorship which culminates into a portfolio containing lesson plans and feedback. New students, prior to registration contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.

# Course Descriptions

## **890 College & Personal Success**

### **10-890-100 College Success: On Course (1 cr.)**

This course prepares students for the unexpected ways in which college differs from other levels of schooling, and sharpens skills that are easily transferable to work, home and career. Students learn proven tools, tips and techniques that make the goal of college completion easier, more fun, and more personally rewarding. The best time to take this is 1st semester.

### **10-890-103 Employability Strategies (1 cr.)**

Designed to ease the student's transition from school to the world of work. The strategies of getting a job and the interpersonal skills needed in keeping it are emphasized. Topics include the job search, employment correspondence, application for employment and job interviewing. These topics are enhanced by mock interviews, individualized job search planning and employment advising, and presentations from human resource personnel.

### **31-890-307 Workplace Reality (2 cr.)**

Focuses on developing skills in interpersonal communication, teamwork and meeting practical workplace requirements. Topics include quality control, team building, statistical process control, report writing, interview and report writing skills, diversity, problem solving, conflict resolution and OSHA requirements.

### **31-890-308 Workplace Organization (2 cr.)**

Provides an overview of skills and behaviors needed in a variety of workplace settings including filing, scheduling, creating and maintaining an effective and efficient work space.

### **31-890-309 Personal Leadership (2 cr.)**

Student will develop skills in personal planning; goal-setting, prioritizing, time management and self-advocacy.