

## 001 Horticulture/Landscape Specialist

### 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.

### 10-001-111 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 Greenhouse and Turf Pest Management (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.

### 10-001-114 Introduction to Arboriculture (1 cr.)

Learn theory and skills in the science of arboriculture. Students will gain hands-on experience planting, pruning and maintaining trees. You'll also learn how to diagnose pests and problems as well as how to protect the trees and treat for problems. Advance techniques of aerial work and large tree removal will be studied.

### 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.

### 10-001-116 Irrigation Systems (1 cr.)

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

### 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.

### 10-001-119 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.

### 10-001-125 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 & Irrigation Systems (2 cr.)

Studies the overall basics of lawn (turf) applications including soils, grading, Wisconsin grasses and maintenance. Students will develop an understanding of the design, operation and maintenance of irrigation systems.

# Course Descriptions

## **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.

## **10-001-140 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.

## **10-001-145 Landscape Estimating and Technical Reports (3 cr.)**

Covers landscape project cost estimating, proposal preparation, and professional written and verbal communication. Students determine landscape project material, equipment, and labor costs, and prepare project proposals, sales presentations, and a lien letter and letter of introduction.

## **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.

## **10-001-170 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.

## **10-001-174 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.

## **10-001-181 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. Topics covered will include construction elements, elevations, 3D Imagery and simulated walkthroughs using CAD Landscape Design Software.

## **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.

**10-006-115 Agriculture Internship (2 cr.)**

Provides students the opportunity to complete 144 hours of work experience in cooperation with an employer and FVTC. Students will give weekly work experience reports. Work Experience site visits will be completed by FVTC staff.

**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.

**10-006-117 Agriculture Career Preparation (1 cr.)**

Assists students with career planning and business skills related to obtaining employment. An independent work experience is planned with each student in cooperation with an employer and FVTC staff.

**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.

# Course Descriptions

## **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.

## **10-006-159 Precision Agriculture Advanced (3 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. Students will learn about unmanned aerial vehicles and FAA rules and regulations.

## **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.

## **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.

## **10-006-169 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**

### **10-057-106 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.

**10-057-109 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

## **10-057-183 Exploring Natural Resources (3 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.

## **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 Chainsaws (1 cr.)**

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

### **10-058-163 S290 Intermediate Wildland Fire Behavior (1 cr.)**

Designed to prepare the prospective supervisor to undertake safe and effective fire management operations.

### **10-058-164 S-219 Firing Operations (1 cr.)**

Planning, execution, safety, coordination and evaluation of an ignition operation on a wildland or prescribed fire.

### **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.

### **10-058-171 History of Wildfire (3 cr.)**

Examines the role of wildland fire and firefighting throughout history to the present.

### **10-058-173 Fitness Qualification Prep 1 (1 cr.)**

Introduces the student to the requirements for the 1.5 mile run, 3 mile pack test and step test which are required by wildland fire hiring agencies.

### **10-058-179 Fire Experience (3 cr.)**

Allows students to gain valuable fire experience for the resume. While not guaranteed, students may be paid for some forest fire suppression duty.

## **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.

## **10-058-185 S134 & RT130 Annual Refresher (1 cr.)**

Compiles two NWCG classes. S-134 is a safety course focusing on personal firefighter safety. RT-130 is the annual fire line safety refresher training required for all firefighters. Topics differ by year based on industry recommendations and identified training needs. Includes annual shelter deployment practice for all participants.

## **10-058-186 S211/S131 Pumps/FF1 (2 cr.)**

Combines two NWCG classes. S-131 is Firefighter Type 1 training. Sometimes called Squad Boss, these are the entry-level supervisors in wildland firefighting. Topics include operational leadership, communications, LCES, and tactical decision making. S-211 consists of three skill areas including supply, delivery and application of water.

## **10-058-188 Wildfire Equipment Operation (2 cr.)**

Operation of heavy equipment of hand tools used in wildland fire.

## **10-058-189 Wildland Fire Chainsaws S-212 (1 cr.)**

Provides introduction to the function, maintenance and use of chainsaws and their tactical wildland fire application. Prereq.: WF Intro S130/S190 and First Aid/CPR or higher EMS certificate.

## **070 Agriculture Mechanics**

### **10-070-102 Ag Equipment Dealership Principles (3 cr.)**

Focuses on the role of the Equipment Dealer in today's agriculture economy. An in depth look at both sides of the customer and business relationship exploring the needs of the agribusiness customer, how the equipment dealer works to meet those needs and the roles of Sales, Parts and Service at the Equipment Dealership.

### **10-070-103 Intro to Service Maintenance & Principles (3 cr.)**

Introduces students to service department functions, service related programs, and principles. Exposure to compact equipment with attachments. Students will learn assembly, pre-delivery, preventative maintenance inspection, along with basic maintenance techniques.

**10-070-104 Safety Principles/Shop Tools (2 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 learn the different tools. They will also learn and perform some basic welding and cutting torch applications.

**10-070-110 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.

**10-070-115 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.

**10-070-118 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.

**10-070-120 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.

**10-070-121 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.

**10-070-123 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.

**10-070-126 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.

**10-070-130 Agriculture Forage Harvesting Equipment (3 cr.)**

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

**10-070-131 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.

**10-070-132 Advanced Agriculture Hydraulic Systems (3 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.

**10-070-134 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.

**10-070-136 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.

# Course Descriptions

## **10-070-137 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.

## **10-070-139 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.

## **080 Farm Operations**

### **10-080-104 Farm Business Management (2 cr.)**

Covers practical use of computer based farm record system(s) for farm business management and financial analysis. Topics include farm business goals, financial statements, selection and use of farm credit, farm business arrangements, estate planning, and farm income taxes.

### **10-080-105 Feeding Modern Livestock Operations (2 cr.)**

Acquaints the student with the nutrients essential for livestock production and reproduction. Anatomy and physiology of digestion and absorption are discussed for single stomach and ruminant animals. Basic principles of feeding modern livestock will be discussed. Introduces the student to the mechanics of balancing livestock rations.

### **10-080-106 Precision Agriculture (2 cr.)**

Provides students with an introduction to common Precision Agriculture technologies used in crop production today. Topics include: satellite technology, hardware, data collection, variable rate control of seed, automatic section control, yield monitors, and new technologies in agriculture. The challenges and benefits of adopting Precision Agriculture technologies on the farm will also be discussed.

### **10-080-107 Tractor Preventive Maintenance (2 cr.)**

Provides students with the knowledge and skills needed to do some general maintenance on diesel engines and electrical systems. Students will learn basic engine and electrical fundamentals.

### **10-080-108 Crop Management Principles (2 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, and in season management of specific crops.

## **10-080-109 Principles of Reproduction (2 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 and male reproductive tract and the management of the estrous cycle in cattle.

## **10-080-110 Harvesting Equipment (2 cr.)**

Provides students with the knowledge and skills to perform maintenance and adjustments associated with grain and forage harvesting equipment. Students will learn the principles of operation for both forage and grain harvesting equipment.

## **10-080-111 Herd Health and Management (2 cr.)**

Covers the herd health and reproductive systems of dairy and livestock animals from birth to maturity. 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 which covers the herd population from calves to mature cows.

## **10-080-112 Soil Principles and Fertility (2 cr.)**

Acquaints the student with the physical, chemical and biological properties of soil in relation to fertility, soil health and good soil management. The students will collect soil samples and identify fertility needs from soil test reports. Nutrient management planning will be taught.

## **10-080-113 Farm and Dairy Records (2 cr.)**

Focuses on management skills and concepts that beginning producers need. 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. Dairy Comp 305 and PCDART will be covered to teach herd management skills.

## **10-080-114 Agricultural Planting Systems (2 cr.)**

Provides students with an understanding of operation and maintenance of planting systems. Topics will include parts identification, planter function, calibrations, planter monitors, and general maintenance.

## **10-080-115 Agricultural Commodity Marketing (2 cr.)**

Explores crop, livestock, and dairy markets. Student develop an understanding of the basic principles of commodity marketing and the ability to apply these principles to the distribution of farm products. Commodity marketing strategies will be taught in order to reduce financial risk of farms.



## 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 Transferring the Farm (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.

## 091 Veterinary Technician

### 10-091-108 Animal Health 2 (2 cr.)

Covers etiology, symptoms, transmission, diagnosis, prevention and control of common diseases in a wide variety of animal species and also those diseases transmissible to humans. Toxic plants and other substances, as well as reporting, sample collection and monitoring of federally regulated diseases will also be discussed.

# Course Descriptions

## **10-091-110 Pharmacology 2-Animal (2 cr.)**

Introduction to drugs and other substances used in veterinary medicine. Emphasizes drug usage, client education, measurement, administration, and safe storage of cardiac, respiratory, gastrointestinal, chemotherapy, ophthalmic and other drugs.

## **10-091-114 Internship-Veterinary Technician Program (3 cr.)**

Integrates students into the practical clinical setting. The internship course is offered during the spring term and requires a minimum of eight weeks, and completion of a minimum of 240 hours. The student's work is supervised by assigned instructors.

## **10-091-120 Veterinary Clinical Pathology 1 (3 cr.)**

Introduces laboratory equipment, elementary laboratory procedures and the principles of microscopy, parasitology, urine analysis, hematology and bacteriology.

## **10-091-122 Advanced Topics in Veterinary Medicine (1 cr.)**

Addresses current topics and advanced diagnostic procedures in veterinary medicine.

## **10-091-123 Lab Animal Science (2 cr.)**

Includes the history of laboratory animal technology and laboratory animal uses. Emphasizes the Animal Welfare Act and other regulations pertaining to the care of laboratory animals. Covers laboratory animal husbandry in depth as students provide care and treatment for a colony of laboratory animals.

## **10-091-124 Veterinary Clinical Pathology 2 (3 cr.)**

Expands upon the principles, procedures and skills learned in Vet. Clinical Pathology, including hematology, parasitology, urine analysis, microbiology, cytology, mycology, virology, serology, immunology and blood chemistries. Will continue to expand upon the use of microscopes, as well as automated laboratory procedures for hematology and clinical chemistries.

## **10-091-127 Veterinary Surgical Nursing 1 (3 cr.)**

Covers surgical instruments, package prep, patient prep, anesthesia, monitoring and post-op care.

## **10-091-128 Animal Nursing (2 cr.)**

Designed to build upon nursing skills learned in Animal Care & Management 1 and 2, with emphasis on anesthetic techniques, surgical preparation and monitoring of all species.

## **10-091-131 Veterinary Office Procedures 1 (1 cr.)**

Covers the development of appropriate public, client and staff relations. Telephone etiquette, making appointments, managing records, client services and education, and personal grooming and attire will be addressed. Legal requirements of record keeping as well as an introduction to the rules and regulations governing the veterinary and laboratory animal technician will also be discussed.

## **10-091-132 Veterinary Office Procedures 2 (1 cr.)**

Covers office documents, patient records, billing, estimates, etc., using veterinary office software.

## **10-091-140 Animal Anatomy & Physiology 1 (3 cr.)**

Emphasizes terminology, functions, location, identification and organization of anatomical structures that are parts of body systems. Students dissect and study cadavers and tissue specimens from common domestic species.

## **10-091-152 Veterinary Surgical Nursing 2 (3 cr.)**

Focuses on the continuation of basic surgical nursing and anesthesia skills. Also covers basic dental prophylaxis, dental radiography, and cardiopulmonary resuscitation.

## **10-091-153 Veterinary Diagnostic Imaging 1 (2 cr.)**

Explores concepts in veterinary radiology, with emphasis on both large and small animals

## **10-091-170 Veterinary Medical Terminology (2 cr.)**

Teaches acceptable veterinary medical terminology for common clinically recognizable diseases, operations, systems and procedures, as well as common medical signs, abbreviations and colloquial vocabulary.

## **10-091-171 Animal Care and Management 1 (3 cr.)**

Focuses on handling and husbandry of the animals most commonly seen in veterinary medicine. Includes animal behavior, nutrition, and healthcare.

## **10-091-173 Animal Care And Management 2 (2 cr.)**

Focuses on handling, medical nursing and disease processes of animals most commonly seen in veterinary medicine

## **10-091-180 Veterinary Technician Clinical Skills (1 cr.)**

Designed to further develop skills in surgical assisting, laboratory evaluation, radiology, pharmacology, animal care and restraint, and office management in preparation for the veterinary technician program internship

## **10-091-181 Veterinary Diagnostic Imaging 2 (2 cr.)**

Develops skills in veterinary radiology, with emphasis on both large and small animals. Emphasizes radiology skills as well as electrocardiography, ultrasound, endoscopy and other special imaging procedures and technologies.

## **10-091-191 Pharmacology 1-Animals (2 cr.)**

Introduces drugs and other substances used in veterinary medicine. Emphasizes drug usage, client education, measurement, administration, and safe storage of anti-parasitics, anti-inflammatories, antibiotics and nervous system drugs.

## **101 Accounting**

### **10-101-104 QuickBooks Accounting (2 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. Upon completion of this course, students are eligible to take the QuickBooks Certification exam.

### **10-101-106 Accounting Internship 1 (1 cr.)**

Provides on-the-job supervised work experience in the accounting industry. Each student completes a minimum of 72 hours working as an intern.

### **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.

### **10-101-132 Cost Accounting (4 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, and CVP analysis. Students learn about tools for planning and control through budgeting and variance analysis, inventory costing and management using JIT, 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.

### **10-101-152 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.

### **10-101-153 Spreadsheets, Advanced (2 cr.)**

Focuses on spreadsheet topics and functions that enhance student expertise.

### **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

### **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.

### **10-101-186 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.

### **10-101-190 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.

# Course Descriptions

## **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.

## **10-101-197 Advanced Tax (2 cr.)**

Covers corporate tax, sales and use tax, personal property tax, and other taxes not covered in Income Tax Accounting.

## **102 Business Administration**

### **10-102-102 Business Management Capstone (2 cr.)**

Focuses on demonstration of the understanding of Business Management program outcomes through instruction and successful completion of a business simulation and/or case study analysis. Students will demonstrate the skills attained throughout the program.

### **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.

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

Student obtains and completes an on-the-job supervised work experience in a business. Each student completes a minimum of 144 hours of work experience and participates in on-line course activities. 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.

### **10-102-115 Business Analyst Essentials (2 cr.)**

Provides a foundational understanding of business analysis and the underlying competencies of a business analyst.

### **10-102-124 BA Planning and Monitoring (3 cr.)**

Provides instruction in the multiple approaches used for performing business analysis, planning activities and ongoing communication, defining scopes, process improvements, assumptions, constraints, and dependencies, and the management process.

### **10-102-126 Elicitation and Collaboration Techniques (2 cr.)**

Define stakeholders and use the stakeholder analysis to conduct elicitation activities accurately capturing information needs, documenting and confirming results. Facilitates meetings and communication plan to support ongoing collaboration.

### **10-102-130 Requirements Analysis & Design (3 cr.)**

Understand the principles of solution requirements, traceability, measuring, and tracing quality of BA work, utilizing metrics, complying with organizational standards, and managing and supporting organizational change.

### **10-102-136 BA Strategy Analysis & Evaluation (3 cr.)**

Understand business structure, strategy, and impact of work efforts; define the importance of vision, strategy, goals and objectives; define solution scope; and examine the connection between technology and business to make strategically informed decisions.

## **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, social media and internet law, and insurance.

## **10-102-198 Business Analyst Career Experience (2 cr.)**

Provides students with an opportunity to select any hands-on experience related to Internship or Capstone Project. Instructor approval required.

## **103**

### **10-103-101 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.

### **10-103-107 Basic Computer Skills (1 cr.)**

Explores the basics of computer operations, including keyboarding, organization of files and folders, working with Internet, basic software, and identification of the hardware pieces that make up a standard computer system.

### **10-103-108 Technology Tools for Marketing, Data (2 cr.)**

Focuses on the basics of Microsoft Excel by showing how to work with marketing data sources using formulas and functions for analysis. Students will gain Microsoft Excel skills to apply pivot tables, different lookup types, basic troubleshooting and data manipulation commands.

### **10-103-109 Technology Tools for Marketing, Communication (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 hands-on course work, students will be able to integrate Word, Excel and PowerPoint.

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

Presents basic features of Microsoft Word 365/2019. Learn how to create, edit, and save documents; format characters, paragraphs, pages, and documents; apply special features when formatting; and create a merged document.

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

Presents basic features of Microsoft Excel 365/2019. Learn how to create, format, and edit worksheets; create formulas and tables; manage large workbooks; and analyze data with charts and What-If Analysis tools.

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

Presents the basic features of Microsoft PowerPoint 365/2019. Learn how to create, edit, and format presentations; and enhance a presentation with animation, video, tables, and charts.

## **10-103-184 MS Word Intermediate (1 cr.)**

Presents intermediate features of Microsoft Word 365/2019. Learn how to use styles and create multilevel lists and charts, use advanced table features and editing tools, build documents from reusable content, and revise documents using markup tools.

## **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.

# Course Descriptions

## **10-104-102 Marketing Communication Strategy (3 cr.)**

Provides students with hands-on experience developing marketing communication strategy and tactics (online and offline). Students will plan, recommend and develop marketing content for businesses.

## **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.

## **10-104-108 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.

## **10-104-117 Sales Principles (3 cr.)**

Introduces and teaches the skills used by sales and marketing professionals to succeed in their careers. It includes concepts relating to customer relationship development, creating valuable business solutions, and professional sales behaviors. Explores written, verbal, and nonverbal communication best practices. Introduces the sales process and how it can be used to promote ideas in the work place.

## **10-104-118 Professional Sales (2 cr.)**

Examines the steps involved in the sales process and implements them through organized sales activities and role plays. Emphasizes sales techniques in Business to Business (B2B) and Business to Consumer (B2C) markets, sales meeting management, writing sales proposals, and creating sales collateral to assist in sales presentations.

## **10-104-119 Sales Strategy (2 cr.)**

Explores contemporary sales methods and how they are used as part of a company's business development plan. The sales methods will include social selling, digital networking strategies, and relationship management using CRM and project management software. Strategic business development planning will focus on customer acquisition, sales expansion, negotiation, and sales management principles.

## **10-104-126 Marketing Internship (2 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.

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

Introduces students to the marketing function and process. Techniques for analyzing the marketing environment and understanding customers' needs and wants are explored. Students apply marketing principles to select target markets, develop positioning and create marketing programs to serve markets. Topics include product management and development, pricing, distribution and promotion strategies.

## **106 Business Technology**

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

Focuses on social and business web applications and components. Students will develop skills to create engaging content for the web.

### **10-106-103 Intro to Office Careers (1 cr.)**

Focuses on career expectations, professional resources, and skills needed to prepare students for the Office Assistant and Administrative Professional programs.

### **10-106-109 Virtual Communication (3 cr.)**

Focuses on demonstrating proficiency with a variety of computer and web-based business applications. Students will develop skills to communicate, meet, and share information professionally with others virtually or in the office.

### **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.

**10-106-113 Microsoft Outlook (2 cr.)**

Introduces students to email communication, appointments, and meeting scheduling within Microsoft Outlook. In addition, students will learn and explore various customization options available within Microsoft Outlook.

**10-106-115 Administrative Procedures (3 cr.)**

Focuses on the development of fundamental office skills. Students will gain skill in general office duties, application of office technologies, and professional communication.

**10-106-116 Professional Business Writing (2 cr.)**

Focuses on spelling, grammar, and punctuation as applied to business documents in both print and digital mediums. Students will develop skills to write professional content for specific business documents.

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

Focuses on business soft skills to provide students with the ability to conduct themselves in the business world with confidence.

**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.

**10-106-123 Critical Thinking for Business (3 cr.)**

Focuses on developing the ability to think independently and make decisions to complete projects. Students will develop skills to integrate multiple components of business-related experiences.

**10-106-124 Business Projects (3 cr.)**

Focuses on business-related projects in a scenario-based environment simulating current office practices.

**10-106-125 Microsoft Office Suite, Advanced (3 cr.)**

Builds on existing software knowledge by applying problem solving and critical thinking skills to a variety of projects. Students will also advance their software knowledge by learning new techniques to use in a professional business office.

**10-106-127 Microsoft Apps (2 cr.)**

Focuses on working with a variety of Microsoft Apps and how to integrate them. Students will explore software used in planning, sharing, organizing information, and meeting coordination.

**10-106-138 Office Career Experience (2 cr.)**

Focuses on the program outcomes by providing a cumulative project experience or on-the-job supervised office work experience. Students will demonstrate the skills developed throughout the program.

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

Focuses on coordinating business meetings and planning successful business events. Students will develop the fundamentals skills of meeting and event logistics.

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

Provides on-the-job supervised office work experience in various businesses. Each student must complete 144 hours working as an intern.

**10-106-157 Administrative Management (3 cr.)**

Focuses on the advanced office skills necessary to succeed in a professional business office. Students will build on existing office skills by applying problem solving and critical thinking skills.

**10-106-178 Business Presentation Techniques (3 cr.)**

Develops skills to prepare, support, and facilitate effective business presentations. Students develop skills to present themselves and design powerful in-person and virtual presentations.

**10-106-199 Business Career Planning (1 cr.)**

Provides students with information and tools to prepare for a Business career. Students will demonstrate professionalism and develop professional employment documents, business communications, and interview strategies.

# Course Descriptions

## 107 Information Technology

### 10-107-110 IT Career Experience (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.

### 10-107-150 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 Computing Essentials (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.

## 109 Hotel & Restaurant Mgt

### 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.

### 10-109-105 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.

### 10-109-109 Hospitality Industry Experience (1 cr.)

Learn through hands-on experience within the hospitality industry by establishing work-related goals, developed with a mentor, and put into practice through daily industry experience.

### 10-109-110 Guest Service Experience (1 cr.)

Provides students real-life experience in a face-to-face, customer focused position within the hospitality industry. This course will focus on active customer engagement and the demonstration of employability essentials.

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

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

### 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.

### 10-109-116 Prof. Field Study - Hospitality & Culinary (3 cr.)

Gives students a global perspective of the Hospitality and Culinary Arts fields through hands-on experiences in a professional field study program. Students will be exposed to global tourism, food, culture, and differences in hospitality presented by the host country.

### 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**

### **10-110-100 Legal Studies & Legal Ethics, Intro to (4 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.

### **10-110-106 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.)**

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

### **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 Legal Professionals (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.

### **10-110-112 Legal Terminology, Introduction to (3 cr.)**

Provides the student with the ability to spell, pronounce, and define legal terms used in a courtroom environment.

### **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.

### **10-110-115 Legal Research & Writing, Introduction (3 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.

# Course Descriptions

## **10-110-117 Legal Research & Writing, Advanced (3 cr.)**

Builds upon existing knowledge of legal research and writing techniques using traditional and computer-assisted resources and federal and state materials. Incorporates advanced writing skills that cover various internal and external legal documents.

## **10-110-118 Law Office Management and Technology (3 cr.)**

Provides 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.

## **10-110-119 Legal Studies Internship (2 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.

## **10-110-142 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.

## **10-110-160 Employment Law for Legal Professionals (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 Criminal Procedures for Legal Professionals (3 cr.)**

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

## **114 Finance**

### **10-114-103 Financial Statement Analysis (3 cr.)**

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

### **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.

### **10-114-105 Financial Services and Products (2 cr.)**

Covers financial institutions that offer a broad spectrum of products and services to government, businesses and individuals. 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.

### **10-114-124 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.

## 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. 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, Introduction to (3 cr.)

Covers human resources planning and processes. Topics include human resource development, employee selection, performance appraisals, compensation, training, labor relations, motivation, teamwork and introduces employment related laws.

## 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 ProffFieldStudy: 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.

### 10-140-164 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.

# Course Descriptions

## 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.

### 10-141-115 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.

### 10-141-117 Spanish 1 Manufacturing (2 cr.)

Presents an introductory approach to conversation using work, manufacturing, and social situations. This course provides the basic vocabulary, grammar, and cultural understanding needed for effectively establishing rapport and interacting with Spanish speakers in professional and social contexts - ultimately improving the communication skills of participants.

### 10-141-125 Spanish for Early Childhood Educators (3 cr.)

Learn the basics of the Spanish language, develop a resource library and lesson plans for incorporating Spanish language and culture into the early childhood education classroom. Gain increased cultural understanding and the confidence to effectively and appropriately interact with Spanish speaking parents and families.

### 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.

### 10-141-166 Intercultural Relations (3 cr.)

Prepare for today's increasingly global and diverse workplace by developing your intercultural competence. Explore the impact of culture on work behavior and professional relations, evaluate workplace cultural scenarios, and build a practical set of tools to effectively and appropriately interact across cultures in order to excel in today's business environment.

## 145 Small Business

### 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 Small Business Management (3 cr.)

Focuses on the knowledge and insights needed to lead and manage a small business including managing small business operations, building a team, choosing a location, risk management, product development & supply chain management, financial forecasting, and growth strategies. The course is designed for those who may eventually have their own business or who desire to upgrade their skills in their present business.

### 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.

## **10-145-109 Small Business Mentorship (1 cr.)**

Engages entrepreneurial students one-on-one with a small business owner to learn the process of entrepreneurship and experience small business ownership. This supervised mentorship exposes students to real-world small business situations related to their passion, and helps them develop the knowledge and confidence to be a successful future small business owner.

## **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.

## **150 IT - Network Communications**

### **10-150-104 Virtualization Infrastructure (3 cr.)**

Covers the infrastructure components related to virtual environments, including storage, enterprise systems, virtual networks, and cloud components.

### **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.

### **10-150-111 Scripting with Python (3 cr.)**

Provides a gentle introduction to scripting with the Python language for students without prior scripting or programming experience. The course will cover basics of the language, including data types, flow control, regular expressions, input/output and object oriented programming. Students will learn how to use Python to create scripts that manipulate data, automate system tasks, and automate information security.

### **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.

### **10-150-125 Network Infrastructure 3 (3 cr.)**

Covers wide area network (WAN) technologies, dynamic routing and quality of service (QoS) mechanisms used for secure remote access along with the introduction of automation concepts that support the digitalization of networks. Students gain skills to configure and troubleshoot enterprise networks and learn to identify and protect against cybersecurity threats. They are introduced to network management tools and VoIP technologies.

### **10-150-126 Infrastructure as a Service (IaaS) (3 cr.)**

Covers the fundamentals of building IT infrastructure utilizing cloud-based solutions. The course is designed to teach solutions architects how to optimize the use of the cloud by understanding how these services fit into cloud-based solutions by automating tasks along with other business continuity considerations.

### **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.

# Course Descriptions

## **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.

## **10-150-146 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 (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.

## **10-150-155 Linux Essentials - Just Enough Linux (1 cr.)**

Covers Basic Linux topics including operating system basics, file management, graphic user interfaces and the command line interface.

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

Covers Microsoft Windows Server 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.

## **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 Capstone (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**

### **10-152-100 Introduction to Web Design (3 cr.)**

Provides an introduction to the user experience approach to website design. Students will gain an understanding of what is involved in the research phase, including conducting interviews and evaluating systems using principles of good design. Prototypes will be created providing a design solution.

### **10-152-101 HTML 5 (3 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).

### **10-152-105 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.

### **10-152-111 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.

### **10-152-121 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.

# Course Descriptions

## **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 customize WordPress themes and learn how to make WordPress more secure. The course will use HTML, CSS, and the current version of WordPress.

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

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

## **10-152-134 Modern JavaScript (3 cr.)**

Covers basic syntax and code structure that includes changes from ES5 through ES6+. You will be coding web apps to enhance your understanding of the Document Object Model, validating forms, manipulating data, dynamically modifying pages, and creating objects. Debugging techniques will be covered to help with troubleshooting your code. You will then move into more advanced topics, such as, managing state information and security, developing for touchscreen and mobile devices, managing data requests, and working with third-party APIs. Knowledge from this course will help when coding with other JavaScript libraries and frameworks.

## **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).

## **10-152-170 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.

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

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

## **154 IT - Computer Support**

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

Explores the acquisition and support of various technologies and how they interact with businesses. Students will learn how organizations implement technology solutions, research potential solutions to real-world business problems, and present their findings.

### **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.

### **10-154-105 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.



## **10-154-108 IT Service Desk Capstone (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.

## **10-154-110 Enterprise Client (3 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.

## **10-154-111 Device Repair and Maintenance (3 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.

## **10-154-111DE Device Repair and Maintenance (3 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.

## **10-154-113 Fundamentals of Computing (2 cr.)**

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

## **10-154-114 Infrastructure Automation (3 cr.)**

Introduces students to the fundamental skills needed to manage and automate IT Infrastructures. Students will learn the basics of scripting and command line environments using Windows PowerShell and other tools aiding system administrators in automating IT infrastructure.

## **156 IT - Data Science**

### **10-156-103 Python Data Programming (3 cr.)**

Introduction to programming using the Python language. Covers programming fundamentals including variables, datatypes, loops, conditionals, functions, and libraries. Examples focus on storage, retrieval, and manipulation of data.

### **10-156-104 Data Analytics, Introduction (3 cr.)**

Technologies and techniques for identifying, collecting, preparing, processing, and analyzing data relevant to business questions.

### **10-156-105 Data Analytics, Intermediate (3 cr.)**

Additional technologies and techniques for analyzing data, including cloud cognitive services and simple machine learning. Also examines organizational processes surrounding data as well as business analysis for data projects.

### **10-156-106 Programming in R (3 cr.)**

Programming in the R statistical computing language. Examples cover data manipulation, analysis, and plotting.

### **10-156-107 ETL & Data Warehousing (3 cr.)**

Automating data pipelines. Code Extract, Transform, Load (ETL) procedures to connect a variety of data producers, repositories, and consumers. Explores various strategies and schemas for data warehousing as well as the overall flow of data through the organization and its systems.

### **10-156-108 Business Intelligence & Data Visualization (3 cr.)**

Technologies and techniques for communicating summaries, insights, and predictions gleaned from data analyses. Examines storytelling through report design, infographics, charts and graphs, purpose-built interactive dashboards, as well as custom visualizations and animations.

### **10-156-109 Big Data (3 cr.)**

Explores the problems created by, strategies to tackle, and technologies to work with large data sets.

### **10-156-110 Data Analytics Capstone (3 cr.)**

Complete a data project modeled as a real-world scenario. Project phases include business analysis; designing, building, and automating data infrastructure; analysis; visualization; and presenting findings to decision-makers.

# Course Descriptions

## 170 Court Reporting

### 10-170-100 Digital Court Reporting, Introduction to (2 cr.)

Explores a relatively new career in the field of court reporting. Digital court reporting uses professional quality audio recording equipment to register court proceedings. A digital court reporter oversees and maintains the equipment necessary for recording court proceedings and is then responsible for subsequent transcripts.

### 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.

### 10-170-102 Digital Audio Reporting Lab (2 cr.)

Introduces the student to the hardware and software used in courtrooms throughout the state of Wisconsin. Provides students with experience operating hardware and command of software.

### 10-170-103 Legal Transcription (3 cr.)

Develops skills needed to operate machine transcribers, transcribe legal documents into a physical document and use reference materials. Uses dictation material from local legal offices.

### 10-170-104 Legal Transcription 2 (3 cr.)

This is an advanced legal transcription and keyboarding course. Students will prepare a variety of legal documents. In addition, this course will emphasize advanced editing skills, speed, and accuracy of written record of proceedings of courtrooms and other legal proceedings.

### 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.

### 10-170-115 DCR Grammar & Punctuation 1 (3 cr.)

Develops skills and understanding of parts of speech, sentence structure, and punctuation of the spoken word. Grammar and punctuation rules accommodate awkward, unclear, and incorrect English that can be commonplace within speech patterns and frequently found in legal transcripts.

### 10-170-116 DCR Grammar & Punctuation 2 (3 cr.)

Develops advanced skills and understanding of parts of speech, sentence structure, and punctuation of the spoken word. Grammar and punctuation rules accommodate awkward, unclear, and incorrect English that can be commonplace within speech patterns and frequently found in legal transcripts.

### 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.

# Course Descriptions

## **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**

### **10-182-118 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.

## **10-182-130 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.

## **10-182-138 Purchasing Fundamentals (3 cr.)**

In this course, students will explore the impact of purchasing activities on the success and profitability of the organization, and consider the demands made on purchasing by various internal and external stakeholders. Activities include the purchasing process, tactical purchasing versus strategic procurement, strategic sourcing, supplier development and maintenance. Students will also explore contractual, ethical, legal, risk management, and sustainability issues faced by today's purchasing professionals.

## **196 Management Development(SpvMgt)**

### **10-196-103 Continuous Improvement Basics for Office (1 cr.)**

Learn how Lean, Six Sigma and many other process improvement strategies help businesses provide exceptional customer service by delivering the products and services customers want in a timely and efficient manner.

**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.

**10-196-188 Project Management, Intro to (3 cr.)**

Focuses on how to apply the skills and tools necessary to design, implement and evaluate formal projects. Each learner will write a project proposal, work with project teams, sequence project tasks, develop project budgets, identify project resources, implement the project, chart project progress, deal with variations, evaluate the project, and use various technology in these processes.

**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.

## 304 Interior Design

**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.

**10-304-126 Reupholstery (2 cr.)**

Studies manufacturers' upholstery methods and presents the techniques of upholstery and the art of reupholstering. Students reupholster a furniture piece.

# Course Descriptions

## **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.

## **10-304-150 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.

## **10-304-176 Internship - Kitchen & Bath (3 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.

## **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.

### **10-307-108 ECE: Early Language & Literacy (3 cr.)**

Explore strategies to encourage the development of early language and literacy knowledge and skill building in children birth to 8 years of age. Learners will investigate the components of literacy including; literacy as a source of enjoyment, vocabulary and oral language, phonological awareness, knowledge of print, letters and words, comprehension and an understanding of books and other texts. Theories and philosophies regarding children's language and literacy development will be addressed. Dual language learning will be examined within the context of developmentally appropriate practices. Assessment tools for early language and literacy acquisition will be reviewed.

### **10-307-110 ECE: Social Studies, Art, & Music (3 cr.)**

Focuses on beginning level curriculum development in the specific integrated content areas of Social Studies, Art, Music, & Movement (SSAMM).

### **10-307-112 ECE: STEM (3 cr.)**

Focus on beginning level curriculum development in the specific integrated content areas of science, technology, engineering and mathematics.

### **10-307-115 Infant Toddler Capstone (3 cr.)**

Integrate theory, practice, and reflection of the first three Infant Toddler Credential courses and demonstrate best practices. Students will synthesize the information from the previous courses and demonstrate mastery of the competencies through the completion of a portfolio. Upon successful completion students are eligible to apply for the Wisconsin Registry Infant-Toddler Credential.

### **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.

# Course Descriptions

## **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.

## **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: explore the concepts of diversity, cultural responsiveness, and anti-bias as it relates to early childhood education, investigate the history of early childhood education, examine regulatory requirements for early childhood education programs in Wisconsin, summarize types of early childhood education settings, identify the components of a quality early childhood education program, summarize responsibilities of early childhood education professionals, explore early childhood curriculum models and examine the critical role of play as it relates to developmentally appropriate practice.

## **10-307-151 ECE: Infant & Toddler Development (3 cr.)**

Teaches infant and toddler development as it applies to an early childhood education setting. Course competencies include: integrate strategies that support diversity, cultural responsiveness, and anti-bias perspectives; analyze development of infants and toddlers (conception to thirty-six months); correlate prenatal and postnatal conditions with development; summarize child development theories; analyze the role of heredity and the environment; examine culturally and developmentally appropriate environments for infants and toddlers, examine the role of brain development in early learning (conception through thirty-six months); examine caregiving routines as curriculum; and examine developmental and environmental assessment strategies for infants and toddlers.

## **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, cultural responsiveness, and anti-bias perspectives; examine governmental regulations and professional standards as they apply to health, safety, and nutrition; plan a safe early childhood environment; plan a healthy early childhood environment; plan nutritionally sound menus; examine child abuse and neglect issues and mandates; describe Sudden Infant Death Syndrome (SIDS) risk reduction strategies, describe strategies to prevent the occurrence of Shaken Baby Syndrome (SBS); incorporate health, safety, and nutrition concepts into the children's curriculum.

**10-307-169 ECE: Infant Toddler Group Care (3 cr.)**

Focuses on caring for infants and toddlers in center based and family child care settings. Materials will cover program quality, philosophy, structure, environments, health and safety, developmentally appropriate practice, and inclusion/diversity issues.

**10-307-174 ECE: Introductory Practicum (3 cr.)**

Learn about and apply the course competencies in an actual early childhood setting. Explore the standards for quality early childhood education, demonstrate professional behaviors, and meet the requirements for training in the Wisconsin Model Early Learning Standards.

**10-307-175 ECE: Preschool Practicum (3 cr.)**

Serves as the capstone course in The Registry Preschool Credential. Students will be placed or will be working in an early childhood setting with 3 year-old to 5 year-old children and create a portfolio that prepares students for The Registry commission. In this course, students will be implementing regulations and standards for quality early childhood education, applying knowledge of child development and positive guidance, utilizing observation and assessment techniques, and assessing developmentally appropriate environments for preschoolers.

**10-307-177 ECE: Intermediate Practicum (3 cr.)**

Implement regulations and standards for quality early childhood education, applying knowledge of child development and positive guidance, utilizing observation and assessment techniques, and assessing developmentally appropriate environments for children.

**10-307-179 ECE: Child Development (3 cr.)**

Examines child development within the context of the early childhood education setting. Course competencies include: integrate strategies that support diversity, cultural responsiveness, and anti-bias perspectives; analyze social, cultural, and economic influences on child development; summarize child development theories; analyze development of children ages three through five; analyze development of children ages five through eight; relate child development research findings to teaching practice; analyze the role of heredity and the environment; examine the role of brain development in early learning (ages three through eight) examine developmental and environmental assessment strategies for children ages three through eight.

**10-307-181 ECE: Child Care Operations Management (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.

**10-307-182 ECE: Child Care Financial Management (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.

**10-307-184 ECE: Child Care External Environment (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.

**10-307-185 ECE: Child Care Best Practices (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.

**10-307-186 ECE: Child Care Administrator Capstone (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.

# Course Descriptions

## **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, cultural responsiveness, and anti-bias perspectives; promote inclusive programs for young children; apply legal and ethical requirements including, but not limited to, ADA and IDEA; examine the consultation process to embed intervention in natural based settings; differentiate between typical and exceptional development; analyze the differing abilities of children with physical, cognitive, health/medical, communication, and/or behavioral/emotional disorders; identify community and professional resources; interpret an individual educational plan (IEP/IFSP) for children with developmental differences; adapt curriculum to meet the needs of children with developmental differences; examine strategies for cultivating partnerships with families who have children with developmental differences.

## **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, cultural responsiveness, and anti-bias perspectives; analyze techniques for and effects of strong relationship-building with children and families; identify positive and proactive guidance principles and techniques to support children; analyze environmental influences on child behavior; identify strategies that support children's active engagement in the learning environment; identify strategies that proactively teach emotional literacy and regulation techniques; identify strategies that proactively teach friendship skills; identify strategies that proactively teach children calming, relaxation, and problem-solving techniques; utilize observation and assessment techniques to assess and interpret behavior; create a behavior support plan based on a functional behavior assessment; create a guidance philosophy. This course meets the requirements of the "24 hour Wisconsin" Pyramid Model training.

## **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 Relationships (3 cr.)**

Examines the role of relationships with family and community in early childhood education. Course competencies include: implement strategies that support diversity, cultural responsiveness, and anti-bias perspectives when working with families and community; analyze contemporary family patterns and trends; identify strategies to strengthen and support families; explore effective communication strategies; discover strategies for developing respectful and reciprocal relationships with families; analyze strategies to promote family engagement in early childhood education programs; explore a variety of formats for meeting with families in their contexts; advocate for children and families; and explore community resources that provide a range of services for children and families.

## **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.

## **10-307-199 ECE: Advanced Practicum (3 cr.)**

Demonstrate competence in supporting child development through observation, assessment and implementation of teaching strategies as students work in and learn about and apply the course competencies in an actual early childhood setting. Demonstrate a high level of skill in fostering relationships with children, families and early childhood professionals, and use skills learned in a lead teacher role to develop a career plan to transition from student to early childhood education professional.

## **10-307-204 Supervise/Admin ECE Programs (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.

## **10-307-301 Introduction to Family Child Care (3 cr.)**

Introduces family child care topics such as quality standards, health and wellness, child development, curriculum planning, guiding children's behavior, program wellness, and provider health and wellness. This course fulfills requirements for Department of Children and Families entry-level courses Fundamentals of Family Child Care and Introduction to the Child Care Profession.

## **10-307-302 Family Child Care: Responsive Programming (3 cr.)**

Focuses on creating responsive family child care programming with an emphasis on building relationships and curriculum. Introduces important topics such as quality standards for relationships, intentional relationships, diversity and anti-bias perspectives, family partnerships, mixed age curriculum, learning environment indoor and outdoor.

## **10-307-303 FCC: Financial Management & Planning (3 cr.)**

Focuses on managing finances of a family child care with an emphasis on principles and practices for budget planning, budget preparation, and fiscal management. Introduces important topics such as quality standards for financial management and planning, business management, financial planning, record keeping, business budgets, marketing and financial management tools and systems.

## **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.

### **10-314-110 Baking Essentials (2 cr.)**

Applies the basic principles involved in the purchase, preparation and use of food stuffs as it pertains to bakery and pastry. The proper identification and use of equipment, correct measuring techniques, and baker percentages are covered. Students will calculate math challenges using typical bakery scenarios.

### **10-314-111 Advanced Cake Decorating 1 (1 cr.)**

Focuses on advanced methods of cake decorations through a multitude of mediums. The student will explore specialty cakes through production and learn of their history. There will also be a focus on the design process, structure, and color wheel using a variety of tools and materials.

### **10-314-112 Baking and Pastry Operations 1 (3 cr.)**

Introduces basic concepts for front of house and back of house production and operations. The student run retail space will focus on customer service, equipment uses, production, and will showcase bakery items prepared by students.

### **10-314-113 Baking Industry Experience (1 cr.)**

Provides the student the opportunity to investigate and learn through structured, hands-on experiences in the bakery and pastry industry out in the workforce with a mentor.

### **10-314-114 Plated Desserts (1 cr.)**

Applies knowledge gained in pastry, confections, cakes, and specialty dessert methods to create composed plated desserts. Focuses on balancing flavors, textures, colors, and aromas while mastering plate composition, garnish, and sauces for classical, modern, restaurant, and competition style desserts.

### **10-314-115 Advanced Cake Decorating 2 (1 cr.)**

Applies knowledge gained in Cake Production and Advanced Cake Decorating 1 to create multiple tiered and specialty cakes. Students will balance flavors, textures, colors, and aromas while mastering dimensional design and layout using a variety of tools and materials.

### **10-314-116 Chocolate (1 cr.)**

Delves into everything chocolate, including the tempering process. Students learn about the handling and production of all types of chocolate, seasonal treats, modeling chocolate and chocolate sculpture.

### **10-314-117 Healthy and Natural Baking (1 cr.)**

Takes students' knowledge of ingredients and their functions/properties and continues into recipe modification for a healthier and more natural outcome. The student will delve into special dietary needs through the production of baked goods.

# Course Descriptions

## **10-314-118 Baking and Pastry Operations 2 (3 cr.)**

Expands on Baking and Pastry Operations 1 for front of house and back of house. Moving forward in the retail space the student will continue with customer service, equipment use and production. The student will also have an emphasis on management, scheduling production and operations, costing, pricing, as well as order and inventory control.

## **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.

### **10-316-110 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.

### **10-316-117 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, 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, pies, 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.

### **10-316-133 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.

**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, fillings, and buttercreams. The proper techniques of mixing, folding, and creaming are emphasized. There is also buttercream decorating basics.

**10-316-173 Confections (1 cr.)**

Features sugar and candies through the student handling a variety of sugars. Besides learning the principles of sugar usage, the student will become familiar with various types of candies, seasonal treats, and sugar work through production.

**10-316-174 Pastries (1 cr.)**

Introduces classical and modern pastry production methods of small desserts for buffet service as well as larger high-end statement pieces. During this course, the student will successfully produce and display desserts for buffet service with garnish according to industry standards.

**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.

# Course Descriptions

## **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**

### **10-402-100 Private Pilot-Flight 1 (2 cr.)**

Prepares the student to fly the aircraft solo and covers the basic fundamentals of flying including 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, and emergency operations to the Private Pilot certificate level. This course is Stage 1 of the 141 Private Pilot training course.

### **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.

### **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.

### **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.

### **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.

### **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.

### **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.

### **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. Spin Aircraft Hours: 2, Ground Hours: 101. Total Cost: \$1,307.77, which includes Insurance/AC Lease/Fuel Fees \$526.67, Aviation Testing Fees \$173.00, Program Fee \$423.00, Material Fee \$147.00, Activity Fee \$38.10. Costs are for the 2021-2022 school year, and are subject to change.

**10-402-113 Private Pilot-Flight 1A (1 cr.)**

Prepares the student to fly the aircraft solo and covers the basic fundamentals of flying including 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, and emergency operations to the Private Pilot certificate level. This course begins Stage 1 of the 141 Private Pilot training course.

**10-402-115 Private Pilot-Flight 1B (1 cr.)**

Prepares the student to fly the aircraft solo and covers the basic fundamentals of flying including 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, and emergency operations to the Private Pilot certificate level. This course completes Stage 1 of the 141 Private Pilot training course.

**10-402-116 Instrument Flight 2A (1 cr.)**

Learn and refine basic radio navigation procedures, including the intercepting and tracking of courses through the use of VORs, Localizers, NDBs and other navigation systems. The student will also learn to perform instrument approaches. Also covered is 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. This course begins Stage 2 of the 141 Instrument training course.

**10-402-117 Instrument Flight 2B (1 cr.)**

Learn and refine basic radio navigation procedures, including the intercepting and tracking of courses through the use of VORs, Localizers, NDBs and other navigation systems. The student will also learn to perform instrument approaches. Also covered is 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. This course completes Stage 2 of the 141 Instrument training course.

**10-402-118 Commercial Flight 1A (1 cr.)**

Broaden your knowledge of VFR cross-country operations, including meteorology and airspace to provide the skill necessary to operate safely during extended cross-country flights. Also covered is 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. This course begins Stage 1 of the 141 Commercial Pilot training course.

**10-402-119 Commercial Flight 1B (1 cr.)**

Broaden your knowledge of VFR cross-country operations, including meteorology and airspace to provide the skill necessary to operate safely during extended cross-country flights. Also covered is 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. This course completes Stage 1 of the 141 Commercial Pilot training course.

**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. C172 Hours: 40, Ground Hours: 32 Total Cost: \$7,108.67, which includes Insurance/AC Lease/Fuel Fees \$6,703.27, Program Fee \$282.00, Material Fee \$98.00, Activity Fee \$25.40. Costs are for the 2021-2022 school year, and are subject to change.

# Course Descriptions

## **10-402-121 Commercial Flight 2A (1 cr.)**

Commercial maneuvers are introduced, and students are provided an opportunity to continue practice of takeoffs, landings, go-arounds, and emergency operations. This stage also continues exercise of instrument flying skills. Also covered is 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. This course begins Stage 2 of the 141 Commercial Pilot training course.

## **10-402-122 Private Pilot-Flight 2 (1 cr.)**

Introduces the student to navigating to nearby airports by use of pilotage. The student will also be introduced to diversion, lost procedures, and planning for alternatives if the planned flight cannot be completed. The student will also be introduced to maximum performance takeoffs and landings. Also covered is 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. This course is Stage 2 of the 141 Private Pilot training course.

## **10-402-125 Private Pilot-Flight 3 (1 cr.)**

Introduces additional elements of aviation that are required of a Private Pilot. The skills of navigation, cross country operations, night operations, and flight solely by reference to the instruments shall be developed. Also covered is 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. This course is Stage 3 of the 141 Private Pilot training course.

## **10-402-126 Instrument Flight 1 (1 cr.)**

Learn precise airplane attitude control solely by reference to the airplane instruments. Also covered is 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. This course is Stage 1 of the 141 Instrument training course.

## **10-402-127 Instrument Flight 2 (2 cr.)**

Learn and refine basic radio navigation procedures, including the intercepting and tracking of courses through the use of VORs, Localizers, NDBs and other navigation systems. The student will also learn to perform instrument approaches. Also covered is 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. This course is Stage 2 of the 141 Instrument training course.

## **10-402-128 Instrument Flight 3 (1 cr.)**

Plan and perform IFR cross-country flights while refining the basic IFR skills required to operate in the instrument environment. Also covered is 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. This course is Stage 3 of the 141 Instrument training course.

## **10-402-129 Commercial Flight 2B (1 cr.)**

Commercial maneuvers are introduced, and students are provided an opportunity to continue practice of takeoffs, landings, go-arounds, and emergency operations. This stage also continues exercise of instrument flying skills. Also covered is 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. This course completes Stage 2 of the 141 Commercial Pilot training course.

## **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.

**10-402-151 Commercial Flight 1 (2 cr.)**

Broaden your knowledge of VFR cross-country operations, including meteorology and airspace to provide the skill necessary to operate safely during extended cross-country flights. Also covered is 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. This course is Stage 1 of the 141 Commercial Pilot training course.

**10-402-152 Commercial Flight 2 (2 cr.)**

Commercial maneuvers are introduced, and students are provided an opportunity to continue practice of takeoffs, landings, go-arounds, and emergency operations. This stage also continues exercise of instrument flying skills. Also covered is 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. This course is Stage 2 of the 141 Commercial Pilot training course.

**10-402-153 Commercial Flight 3 (2 cr.)**

Learn to fly a complex multi-engine airplane and have an opportunity to practice those skills. In addition, the student continues to practice commercial maneuvers. Also covered is 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. This course is Stage 3 of the 141 Commercial Pilot training course.

**10-402-154 Commercial Flight 4 (1 cr.)**

Finish preparing the skills required for a Commercial Single/Multi-Engine Instrument Pilot. Also covered is 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. This course is Stage 4 of the Commercial Pilot training course.

**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. C172 Hours: 10, Ground Hours: 21. Total Cost: \$2,378.52, which includes Insurance/AC Lease/Fuel Fees \$1,675.82, Aviation Testing Fees \$500.00, Program Fee \$141.00, Material Fee \$49.00, Activity Fee \$12.70. Costs are for the 2021-2022 school year, and are subject to change.

**10-402-171 CFI-Flight 1 (2 cr.)**

Preparation of instructional skills for teaching of Recreational, Private, Commercial Single and Multi-Engine airplane with instrument rating. Covers ground 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 from the perspective of a single-engine CFI applicant. This course is Stage 1 of the Flight instructor training course.

# Course Descriptions

## **10-402-172 CFI-Flight 2 (2 cr.)**

Preparation of instructional skills for teaching of Recreational, Private, Commercial Single and Multi-Engine airplane with instrument rating. This course is Stage 2 of the Flight instructor training course. The CFI applicant will complete spin training as well as accomplish the required teaching observations. The CFI applicant must also prepare lesson plans and teaching outlines for all tasks of the Private, Commercial and Instrument Pilot Airman Certification Standards.

## **10-402-173 CFI-Flight 3 (1 cr.)**

Learn to teach in a single engine airplane and have an opportunity to practice those skills. This course is Stage 3 of the Flight instructor training course. This will be the preparations for all requirements for initial CFI certification in a Single Engine airplane to the applicable Airman Certification Standards or Practical Test Standards.

## **10-402-174 CFI-Flight 4 (1 cr.)**

Learn to teach in a Multi engine airplane and have an opportunity to practice those skills. This course is Stage 4 of the Flight instructor training course. This will be the preparations for all requirements for additional flight instructor class rating in a Multi Engine airplane to the applicable Airman Certification Standards or Practical Test Standards.

## **10-402-175 CFI-Flight 5 (1 cr.)**

Learn to teach instrument skills in a single engine airplane and have an opportunity to practice those skills. This course is Stage 5 of the Flight instructor training course. This will be the preparations for additional flight instructor instrument rating in a single engine airplane to the applicable Airman Certification Standards or Practical Test Standards.

## **10-402-181 Commercial Flight 3A (1 cr.)**

Learn to fly a complex multiengine airplane and have an opportunity to practice those skills. In addition, the student continues to practice commercial maneuvers. Also covered is 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. This course begins Stage 3 of the 141 Commercial Pilot training course.

## **10-402-182 Commercial Flight 3B (1 cr.)**

Learn to fly a complex multiengine airplane and have an opportunity to practice those skills. In addition, the student continues to practice commercial maneuvers. Also covered is 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. This course completes Stage 3 of the 141 Commercial Pilot training course.

## **10-402-184 CFI-Flight 1B (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 Sport, Recreational, Private, and Commercial Pilot certificate level from the perspective of a single-engine CFI applicant. This course completes stage 1 of the Flight instructor training course.

## **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. C172 Hours: 48, Simulator Hours: 15, Ground Hours: 40. Total Cost: \$8,952.03, which includes Insurance/AC Lease/Fuel Fees \$8,343.93, Program Fee \$423.00, Material Fee \$147.00, Activity Fee \$38.10. Costs are for the 2021-2022 school year, and are subject to change.

## **10-402-187 CFI-Flight 2A (1 cr.)**

Preparation of instructional skills for teaching of Recreational, Private, Commercial Single and Multi-Engine airplane with instrument rating. The CFI applicant will complete spin training as well as accomplish the required teaching observations. The CFI applicant must also prepare lesson plans and teaching outlines for all tasks of the Private, Commercial and Instrument pilot Airman Certification Standards. This course begins Stage 2 of the Flight instructor training course.

## **10-402-188 CFI-Flight 2B (1 cr.)**

Preparation of instructional skills for teaching of Recreational, Private, Commercial Single and Multi-Engine airplane with instrument rating. The CFI applicant will complete spin training as well as accomplish the required teaching observations. The CFI applicant must also prepare lesson plans and teaching outlines for all tasks of the Private, Commercial and Instrument pilot Airman Certification Standards. This course completes Stage 2 of the Flight instructor training course.

## **10-402-190 CFI-Flight 1A (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 Sport, Recreational, Private, and Commercial Pilot certificate level from the perspective of a single-engine CFI applicant. This course begins stage 1 of the Flight instructor training course.

## **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. C172 Hours: 55, Simulator Hours: 4, Ground Hours: 65. Total Cost: \$10,644.77, which includes Insurance/AC Lease/Fuel Fees \$9,363.67, Aviation Testing Fees \$673.00, Program Fee \$423.00, Material Fee \$147.00, Activity Fee \$38.10. Costs are for the 2021-2022 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. C172 Hours: 50, Simulator Hours: 20, Ground Hours: 50. Total Cost: \$10,566.52, which includes Insurance/AC Lease/Fuel/FAA Test Fees \$9,112.42, Aviation Testing Fees \$846.00, Program Fee \$423.00, Material Fee \$147.00, Activity Fee \$38.10. Costs are for the 2021-2022 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. C172 Hours: 20, Be76 Hours: 37, Simulator Hours: 28, Ground Hours: 39. Total Cost: \$17,991.54, which includes Insurance/AC Lease/Fuel Fees \$16,210.44, Aviation Testing Fees \$1,173.00, Program Fee \$423.00, Material Fee \$147.00, Activity Fee \$38.10. Costs are for the 2021-2022 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. Be76 Hours: 18, Simulator Hours: 8, Ground Hours: 79. Total Cost: \$7,859.44, which includes Insurance/AC Lease/Fuel Fees \$6,078.34, Aviation Testing Fees \$1,173.00, Program Fee \$423.00, Material Fee \$147.00, Activity Fee \$38.10. Costs are for the 2021-2022 school year, and are subject to change.

## **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. C172 Hours: 15, Simulator Hours: 10, Ground Hours: 27. Total Cost: \$3,583.09, which includes Insurance/AC Lease/Fuel Fees \$2,880.39, Aviation Testing Fees \$500.00, Program Fee \$141.00, Material Fee \$49.00, Activity Fee \$12.70. Costs are for the 2021-2022 school year, and are subject to change.

## **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.

# Course Descriptions

## **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.

## **10-405-132 Collision Repair Welding-Bridge (1 cr.)**

Focuses on welding and cutting a variety of steel common in collision repair. This bridge class is designed for students that have completed Intro, Transportation Welding (10405147) or Intro to Collision Repair Welding (10405143) or Transportation Welding, Intro to (10442111) and are pursuing an Auto Body degree.

## **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.

## **10-405-148 Metal Refinishing (1 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 industry terms and definitions, as well as provides the learner with safety considerations and environmental regulations. Emphasis is on personal protection, types of equipment, and operation and maintenance.

## **10-405-149 Paint Refinishing (1 cr.)**

Explain hazardous airborne pollutant reduction. Students are introduced to the fundamentals of paint refinishing. Focus on different refinishing spray gun set-up, operation, application, safety and maintenance. Students are also introduced to buffing and polishing in this course.

## **10-405-150 Refinishing Set-up and Safety (2 cr.)**

Focuses on different refinishing spray gun set-up, operation, and maintenance. There is an emphasis on personal protection, as well as the environmental regulations regarding working with refinishing materials. Students are also introduced to buffing and polishing in this course.

## **10-405-151 Part Removal and Installation (3 cr.)**

Focuses on developing the knowledge and skills necessary for interior and exterior part removal, storage, replacement, and installation. Students are also introduced to repair planning.

## **10-405-152 Steel MIG Welding (2 cr.)**

Focuses on developing the knowledge and skills necessary for MIG welding steel in various automotive collision repair scenarios. Students are also introduced to the process of sectioning.

**10-405-153 Basic Nonstructural Repair (3 cr.)**

Focuses on developing the knowledge and skills necessary for understanding sheet metal characteristics, repair sequencing, and making repair versus replace decisions. Students are introduced to the process of straightening steel exterior panels.

**10-405-154 Advanced Nonstructural Repair (2 cr.)**

Focuses on developing the knowledge and skills necessary for advanced straightening of steel in complex areas as well as straightening aluminum exterior panels.

**10-405-155 Plastic Repair (2 cr.)**

Focuses on developing the knowledge and skills necessary for repairing the variety of plastics used on automotive vehicles.

**10-405-156 Surface Preparation and Masking (2 cr.)**

Focuses on developing the knowledge and skills necessary for masking and prepping surfaces in various refinishing scenarios.

**10-405-157 Basic Refinishing Application (3 cr.)**

Focuses on developing the knowledge and skills necessary for applying automotive refinish materials.

**10-405-158 Advanced Refinishing Application (3 cr.)**

Focuses on developing the knowledge and skills necessary for advanced application of automotive refinish materials, including blending and tri-stage finishes.

**10-405-159 Refinishing Color Theory (2 cr.)**

Focuses on developing the knowledge and skills necessary for tinting automotive refinish materials, which includes an in-depth look at color theory.

**10-405-160 Estimating (3 cr.)**

Focuses on developing skills needed to write collision analysis sheets. Learning how to identify the parts, materials, and labor needed to repair collision damaged vehicles will be covered.

**10-405-161 Advanced Joining Techniques (2 cr.)**

Focuses on developing the knowledge and skills necessary for MIG welding aluminum, along with squeeze type resistance spot welding (STRSW), weld-bonding, and rivet-bonding.

**10-405-162 Collision Structural Damage Analysis (3 cr.)**

Focuses on developing skills and knowledge needed to anchor and measure collision damaged vehicles and the identification of parts and materials that are needed for proper repair. Perform structural realignment and structural part replacement on damaged vehicles.

**10-405-163 Welded Panel Replacement (4 cr.)**

Focuses on developing skills needed to perform damage analysis and replacement of outer welded-on panels on collision damaged vehicles.

**10-405-164 Collision Heating & Cooling (2 cr.)**

Focuses on developing the skills needed to diagnose, service, and repair collision damaged climate control systems including heating, cooling, and air distribution. Students will learn proper handling of refrigerants and will be Federal 609 certified to perform automotive refrigerant repair.

**10-405-165 Collision Basic Electrical (2 cr.)**

Focuses on developing the skills needed to diagnose and repair electrical and electronic systems on collision damaged vehicles. Develop skills to service batteries, starting, charging, and lighting systems.

**10-405-166 Collision Avoidance (2 cr.)**

Focuses on developing skills needed to replace components on collision avoidance safety systems, airbags, and recalibrate advanced driver-assistance systems (ADAS).

**10-405-167 Collision Alignment (2 cr.)**

Focuses on developing the skills needed to diagnose and replace steering and suspension components on collision damaged vehicles. Students will also complete a wheel alignment.

**10-405-170 Collision Youth Internship 1 (1 cr.)**

Focuses on developing basic skills in professionalism, safety, and the use of basic power tools. There is an emphasis on personal protection, as well as the environmental regulations regarding working with hazardous materials. Designed to give students occupational experience in the collision field.

**10-405-171 Collision Youth Internship 2 (1 cr.)**

Focuses on further developing basic skills in professionalism, safety, and the use of basic power tools. There is an emphasis on refinishing spray gun set-up, operation, and maintenance. Students are also introduced to buffing and polishing. Designed to give students occupational experience in the collision field.

**10-405-173 Plastics Repair-Bridge (1 cr.)**

Introduction to complex two-sided repairs and nitrogen plastic welding. This course is designed for students in the Auto Body programs that have already taken Plastics and Composites (10405186).

# Course Descriptions

## **10-405-174 Refinishing Set-up and Safety-Bridge (1 cr.)**

Focuses on further developing basic skills in professionalism, safety, and the use of basic power tools. There is an emphasis on refinishing spray gun set-up, operation, and maintenance. Students are also introduced to buffing and polishing. This bridge course is designed for students that have completed Youth Internship 1 (10405170) and are in the Auto Body programs.

## **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.

### **31-409-317 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.

### **31-409-319 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.

### **31-409-321 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.

### **31-409-324 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.

### **31-409-326 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.

### **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 Manufacturing Technology-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.

### **31-410-354 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.

# Course Descriptions

## **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.

## **31-410-358 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.

## **31-410-360 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.

## **31-410-362 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 Diesel**

### **10-412-102 Introduction to Diesel Technology (4 cr.)**

Introduces the diesel shop environment, and emphasizes shop safety and general shop practices. Introduces over the road commercial motor vehicle preventative maintenance, and prepares students for success in the core diesel program classes.

### **10-412-103 Heavy Duty Diesel Steering & Suspension (4 cr.)**

Covers maintenance, repair, and minor diagnostics of heavy duty steering & suspension systems used on over the road commercial motor vehicles.

### **10-412-104 Heavy Duty Diesel Engine Maintenance (4 cr.)**

Covers maintenance, repair, and minor diagnostics on heavy duty diesel engines used in over the road commercial motor vehicles.

### **10-412-105 Heavy Duty Diesel HVAC & Cab Systems (4 cr.)**

Covers maintenance, repair, and minor diagnostics on heating, ventilation, and air conditioning systems used in heavy duty over the road commercial motor vehicles. Students learn to maintain and repair cab components used on over the road commercial motor vehicles, and prepare for the Federal EPA 609 certification test.

### **10-412-106 Heavy Duty Diesel Drivetrains (4 cr.)**

Covers maintenance, repair, and minor diagnostics on drivetrains used in heavy duty over the road commercial motor vehicles. Students service clutches, transmissions, differentials, drivelines, and wheel ends used on over the road commercial motor vehicles.

### **10-412-107 Heavy Duty Diesel Air & Hydraulic Brakes (4 cr.)**

Covers maintenance, repair, and minor diagnostics on air and hydraulic brake system used on over the road commercial motor vehicles.

### **10-412-108 Heavy Duty Diesel Foundation Brakes (4 cr.)**

Covers maintenance, repair, and minor diagnostics on foundation brake systems used on over the road commercial motor vehicles.

### **10-412-109 Heavy Duty Diesel Electrical Systems (4 cr.)**

Covers maintenance, repair, and minor diagnostics on vehicle electrical system components used on over the road commercial motor vehicles.

### **10-412-110 Heavy Duty Diesel Computer Controls (4 cr.)**

Introduces computer control systems used in over the road commercial motor vehicles. Students learn to diagnose and repair current computer control systems.



**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.

**10-412-116 Heavy Duty Diesel Advanced Drivetrain (4 cr.)**

Covers diagnosing and repair of over the road commercial vehicle drivetrains. Students diagnose and repair manual, automated, and automatic transmissions.

**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.

**10-412-120 Heavy Duty Diesel Advanced Engine Repair (4 cr.)**

Covers major repair and diagnostics on heavy duty diesel engines found in modern commercial motor vehicles. Students disassemble, repair, assemble, and perform major diagnostics.

**10-412-123 Heavy Duty Diesel Engine Systems (4 cr.)**

Covers diagnosing and repair of over the road commercial motor vehicle engine systems. Students perform engine diagnostics that relate to engine performance issues and/or customer complaints.

**10-412-124 Heavy Duty Diesel Capstone (1 cr.)**

Perform preventive maintenance inspections, service, and repair of commercial motor vehicles. Students will also complete Department of Transportation annual inspections.

**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.

# Course Descriptions

## **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.

## **413 Electricity**

### **31-413-301 Introductory Residential Wiring Methods (3 cr.)**

Introduces students to residential wiring methods that includes practical application and hands-on experience in implementing safety, tool usage, and NEC code requirements.

### **31-413-302 Intermediate Residential Wiring 1 (3 cr.)**

Learn basic electrical wiring concepts, DC electrical theory, Ohm's law and types of services for residential applications. Students will build on their skills of print reading and NEC code knowledge while completing their hands-on assessments installing GFCI, AFCI, and other wiring devices.

### **31-413-303 Intermediate Residential Wiring 2 (3 cr.)**

Expand knowledge of basic electrical wiring concepts, electrical theory, and DC circuits while also be introduced to residential lighting installations, splicing techniques that include single pole switching, duplex receptacle wiring, 3-way switching, 4-way switching, and troubleshooting. Students will continue to develop their skills while completing their hands-on assessments.

### **31-413-304 Advanced Residential Installations (3 cr.)**

Allows students to demonstrate knowledge of residential wiring by applying skills learned in previous courses to complete a large-scale housing project. They will test their knowledge of the NEC, while developing new techniques along with troubleshooting to complete this project.

### **31-413-305 Introductory Commercial Wiring Methods (3 cr.)**

Introduces students to Commercial wiring methods that include practical application and hands-on experience. Skills that students will develop are interpretation of commercial plans, branch circuit requirements, along with conduit bending techniques while applying NEC code requirements.

### **31-413-306 Intermediate Commercial Wiring 1 (3 cr.)**

Learn basic electrical wiring concepts while studying motor control fundamentals, as well as the basic AC theory and motor controls. Students will build on their skills of conduit installations, fittings and support hardware, MC cable, low voltage switching, and NEC code knowledge while completing their hands-on assessments

### **31-413-307 Intermediate Commercial Wiring 2 (3 cr.)**

Expands knowledge of commercial wiring concepts, AC electrical theory, control components, pilot devices, and control circuit diagrams. Introduction to commercial lighting installations, wiring devices, and troubleshooting will also occur. Students will continue to develop their skills while completing their hands-on assessments.

### **31-413-308 Advanced Commercial Installations (3 cr.)**

Allows students to demonstrate knowledge of commercial wiring by applying the skills they have learned in previous courses to complete a large-scale project. They will test their knowledge of the NEC, while developing new techniques along with troubleshooting to complete this project.

### **31-413-309 Introductory Industrial Wiring Methods (3 cr.)**

Introduces students to Industrial wiring methods along with the introduction to the principles Photovoltaics. Students will develop skills used to install generators, fire alarm systems and control circuit. Along with conduit bending and threading techniques, students will apply the proper NEC code requirements.

### **31-413-310 Intermediate Industrial Wiring (3 cr.)**

Expands upon industrial wiring concepts while studying schematics and motor control circuits. Students will build on their skills of conduit installations and NEC code knowledge while completing their hands-on assessments.

### **31-413-318 Advanced Industrial Installations (3 cr.)**

Allows students to demonstrate knowledge of industrial wiring by applying the skills they have learned in previous courses to complete the required projects. They will test their knowledge of the NEC, while developing skills to complete the troubleshooting assessments.

## 420 Machine Tool Technology

### 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.

### 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.

### 32-420-341 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.

# Course Descriptions

## **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.

## **32-420-354 Introduction to Numerical Control - MTO (3 cr.)**

Upgrades the skills of established machinists. Prepares students to become a higher level machine operator or machinist in an industrial plant.

## **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.

### **10-442-111 Transportation Welding, Intro to (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.

### **10-442-120 Related Welding (1 cr.)**

Prepares students with the common techniques and procedures for SMAW, GMAW, GTAW, and FCAW welding in a repair or machine shop environment. Topics include welding metal, cutting metal with plasma and oxy-fuel, and metal identification. Laboratory activities will provide the student with hands-on practice.

### **10-442-121 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.

### **10-442-123 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.

### **10-442-124 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.

## **10-442-125 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.

## **10-442-126 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.

## **10-442-127 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.

## **10-442-128 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.

## **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**

### **10-449-102 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.

### **10-449-106 Construction Accident Prevention (3 cr.)**

Examines the requirements for managing safety programs on construction sites, to include regulatory requirements, financial aspects, risk management, and loss reduction.

### **10-449-109 Industrial Fire Protection (3 cr.)**

Examines fire protection systems used within industry. Will cover fire chemistry, regulatory requirements of fire prevention, fixed fire extinguishing systems, and portable fire extinguishing systems. Use of the Incident Command System during emergency management will also be discussed.

### **10-449-115 Industrial Hygiene Concepts (3 cr.)**

Introduces students to the concepts of Industrial Hygiene within industry. Includes a basic review of anatomy and physiology, hazard evaluation techniques, the use of common monitoring equipment, and the role of the industrial hygienist in a safety management system.

### **10-449-116 Conducting EHS Training (1 cr.)**

Learn adult learning methods and models to conduct a wide variety of high level Environmental Safety and Health Training as required in Manufacturing and Construction industries.

### **10-449-118 Construction Hazard Recognition (3 cr.)**

Introduces students to common hazards within the construction industry, including OSHA's Focus Four Hazard, Fall Protection Hazards, Excavation, Material Handling, Electrical Hazards, and associated protective measures.

### **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.

### **10-449-120 Safety Management Systems (3 cr.)**

Reviews common components of safety management systems within industry. Will cover the components of OSHA's Injury and Illness Prevention Programs, ANSI Z10, and ISO 45001.

# Course Descriptions

## **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.

## **10-449-157 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.

## **10-449-161 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.

## **10-449-168 Fall Protection (3 cr.)**

Discusses common methods of fall protection in the construction industry. Fixed fall protection systems, personal fall arrest systems, and drop prevention will be emphasized. Upon completion, students will meet the OSHA training requirements to be a Fall Protection Competent Person.

## **10-449-169 Material Handling in Construction (2 cr.)**

Discusses common material handling situations within construction include crane safety, rigging requirements, powered industrial trucks, and manual material handling hazards.

## **10-449-171 Trenching and Excavation Safety (1 cr.)**

Discusses the hazards associated with trenching and excavation with special emphasis placed on collapse prevention. Excavation hazards, protective systems, soil classifications, the role of the competent person and rescue options will be covered.

## **10-449-173 Construction Safety with OSHA 10 (1 cr.)**

Introduces students to common construction hazards. Topics include OSHA's Focus Four Hazards of falls from heights, electrocutions, struck-by hazards, and caught-between hazards, safe ladder usage, fire protection and prevention, scaffolding safety, personal protective equipment, health hazards in construction, and excavation hazards.

## **10-449-180 Construction Trades Safety (2 cr.)**

Teaches skills to recognize, evaluate and control construction site hazards. Includes personal protective equipment and how to perform construction tasks safely. Describes hazards of 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 30-hour completion card.

## **10-449-181 Safety Engineering and Technology (3 cr.)**

Provides students with industrial safety safeguarding from an engineering and technology vantage. Topics include facility protection through design and maintenance, safeguarding options for production equipment, electrical safety technology, fire prevention and protection, and material handling.

## **10-449-183 Hazardous Materials Management (3 cr.)**

Provides information regarding relevant laws and regulations, relevant scientific principles and their application, and best management practices of hazardous materials.

## **10-449-185 Construction Compliance (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.

## **10-449-188 Essentials of Manufacturing Safety (1 cr.)**

Provides information on the safety responsibilities of workers within the manufacturing industry. Special emphasis will be placed on common hazards and methods of controls.

## **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.

### **10-455-104 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.

### **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.

# Course Descriptions

## **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 (CMT) (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**

### **10-457-131 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.



## **10-457-154 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, 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 shearing, sawing, 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).

## **458 Truck Driving - Contracts**

### **30-458-301 Commercial Driver's License-Theory (2 cr.)**

Covers Federal Motor Carrier Safety Regulations (FMCSRs) information, basic operation, vehicle review, and operating guidelines for a Class A commercial combination motor vehicle. Additional topics include safe operating procedures and advanced operating practices.

### **30-458-302 Class A CDL-Behind the Wheel Range (3 cr.)**

Covers behind the wheel activities including the operation of a combination commercial motor vehicle. Driving exercises related to basic vehicle control skills and mastery of basic maneuvers, necessary to operate the vehicle safely, are conducted. Proper techniques of vehicle inspections, backing exercises, coupling and uncoupling of a Class A commercial combination motor vehicle, are developed.

### **30-458-303 Class A CDL-Behind the Wheel Public Road (3 cr.)**

Covers behind the wheel activities driving a Class A commercial combination vehicle in a variety of public roadway situations and conditions. Road driving prepares the student with the necessary skills required to earn a Class A commercial driver's license (CDL).

### **30-458-304 Commercial Driver's License-Theory 2 (1 cr.)**

Covers federal Motor Carrier Safety Regulations (FMCSRs) information for a Class A commercial combination motor vehicle. Additional topics include professional operating procedures and specialty vehicle operations.

### **30-458-306 Class B CDL-Range and Road (3 cr.)**

Covers Federal Motor Carrier Safety Regulations (FMCSRs) information, basic operation, vehicle review, and operating guidelines for a Class B commercial motor vehicle. Additional topics include safe operating procedures and advanced operating practices.

## **461 Small Engine / OPE Mechanic**

### **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.

### **10-461-150 Intro to Outdoor Power Equipment (3 cr.)**

Introduces the student handbook and program expectations. Emphasizes safety, precision measuring, fasteners, tool usage and basic shop skills. Utilizes computer software programs to create work orders and invoices.

# Course Descriptions

## **10-461-151 OPE Four Stroke 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 engines and recreational engines.

## **10-461-152 OPE Two Stroke Engines (3 cr.)**

Emphasizes the repair of two-cycle, small four-cycle and recreational 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.

## **10-461-153 OPE DC Electrical & Fuel Mgmt Systems (3 cr.)**

Covers Ohm's Law and electrical theory, operation and troubleshooting methods for batteries, starting circuits, charging circuits and accessories. Students will use electronic fuel injection (EFI) software applications to monitor engine functions and diagnose performance complaints. Manufacture certifications may be available in this course.

## **10-461-154 Hydraulics, Drivelines, and Chassis (3 cr.)**

Focuses on the equipment used in groundskeeping, landscaping and maintenance of turf grass. Belt and gear drives, hydrostatic transaxles and hydraulic systems used for lawn mowers, tillers, snowblowers, garden tractors, zero-turn mowers and compact tractors are included in this course. Manufacture certifications may be available in this course.

## **10-461-155 OPE Diesel Engine Systems (3 cr.)**

Provides technicians with skills and knowledge of diesel engine theory, compression, fuel, electrical, cooling and lubrication systems along with emissions and Tier IV compliance. Manufacture certifications may be available in this course.

## **10-461-156 Motorcycle & Moped Service & Repair (3 cr.)**

Teaches students pre-delivery setup and inspections on motorcycles & mopeds. Tune-up procedures and maintenance repairs will be emphasized, including clutches, transmissions, drivelines, ABS brakes, tires, wheels and suspensions. Proper trailer securements and safety tie-downs of motorcycles will also be covered.

## **10-461-157 ATV & UTV Service & Repair (3 cr.)**

Teaches students pre-delivery setup and inspections on ATV/UTV. Tune-up procedures and maintenance repairs will be covered, including clutches, transmissions, drivelines, brakes, tires, wheels and suspensions. Manufacture certifications may be available in this course.

## **10-461-158 Motorcycle & Moped Electrical Diagnostics (3 cr.)**

Emphasizes motorcycle & moped electrical systems including starting, charging, and accessory circuits, schematics, ABS brakes, diagnostics and troubleshooting. Electronic fuel injection (EFI) software applications will be used to monitor engine functions and diagnose problems.

## **10-461-159 ATV & UTV Electrical & Diagnostics (3 cr.)**

Emphasizes ATV & UTV electrical systems including starting, charging, and accessory circuits, schematics, diagnostics and troubleshooting. Electronic fuel injection (EFI) software applications will be used to monitor engine functions and diagnose problems.

## **462 Industrial Equipment Mechanic**

### **31-462-301 Rigging & Lifting, Const & Ind Related (1 cr.)**

Instructs in the proper use and inspection of hand rigging (chains and hoists) and power rigging (using cranes and special lifting equipment). The safe use and handling of wire and fiber ropes, chains, and rigging hardware are emphasized. Includes classroom and lab activities.

## 476 Pipe Trades Preparation

### 31-476-301 Introduction to Pipe Trades Careers (3 cr.)

Introduces the plumbing, steamfitting, sprinkler fitting, and HVAC piping trades. Explores trade terminology and component identification necessary to meet the basic skills in the pipe trade industry.

### 31-476-302 Pipe Trades Print Reading (2 cr.)

Introduces the skills required for individuals to read and interpret residential and commercial pipe trades drawings. The information and symbology on plumbing, steamfitting, and other pipe trades' drawings will be covered.

### 31-476-304 Piping Systems (3 cr.)

Introduces piping systems and piping systems maintenance. Provides an overview of piping systems, metal piping, nonmetallic piping, tubing, hoses, common valves, special valves, strainers, filters and traps, and piping accessories.

### 31-476-305 Pipe Joining Processes (3 cr.)

Introduces students to the tools and skills required to join plastic and copper piping systems using sweating, brazing, solvent welding. Also covers various PEX joining methods.

### 31-476-307 Pipe Trades Green Environment (1 cr.)

Covers the impacts of the built environment on the green environment. It introduces methods to reduce the impact on the environment and explains how it applies to the pipe trades.

## 486 Aircraft Electronics

### 10-486-110 Aircraft Instrument Systems (3 cr.)

Introduces operating principles and use of aircraft instrumentation on pressure, gyroscopic, and direction indicating. Operation and use of electronic systems for flight instrument, altitude direction indicator, centralized aircraft monitoring, engine indicator and crew alerting systems will be studied. Inspection and troubleshooting of engine instrument systems and components will be covered.

### 10-486-111 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.

### 10-486-112 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.

### 10-486-114 Avionics Communications (3 cr.)

Studies integrated communication systems used in various aviation aircraft. Very High Frequency Communication, High Frequency Communication, Ultra High Frequency Communication, Audio Control, Selective Calling, Satellite Communications and Transmitter systems are emphasized. Class provides in-depth, hands-on training in identifying, isolating, repairing and calibrating avionics communication systems.

### 10-486-123 FCC License, Preparation for (1 cr.)

Provides 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.

### 10-486-124 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.

# Course Descriptions

## **10-486-130 Avionics Co-op 1 (1 cr.)**

Provides the Aircraft Electronics student to gain experience in an aircraft electronics-related repair/service business. Each placement is based on student and co-op site needs and is coordinated and supervised by FVTC Aircraft Electronics staff. Student participates in the program three hours a week. Department consent required.

## **10-486-140 Avionics Control Systems (2 cr.)**

Studies the operation of air data, flight director, autopilot, altitude and heading reference systems. Examines the integration of these systems and the control of the aircraft in flight. Aircraft control surfaces and information sources used to fly the aircraft are emphasized. Teaches practical application of servo, synchro slaved compass systems, flight director and autopilot systems.

## **10-486-143 Avionics Surveillance Systems (3 cr.)**

Studies integrated surveillance avionics systems in various aviation aircraft. Transponders, Traffic Alert and Collision Avoidance, Enhanced Ground Proximity Warning, and Weather Radar systems are studied. Class focuses on understanding 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.

## **10-486-144 Installation Project 1 (1 cr.)**

Utilizes procedures for installation and removal of avionics electronic equipment on aircraft. Student uses 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.

## **10-486-145 Installation Project 2 (1 cr.)**

Provides for the completion of a more in-depth project as a continuation of Installation Project 1. Student follows procedures for installation and removal of avionics electronic equipment on aircraft utilizing 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.

## **10-486-146 Installation Project 3 (1 cr.)**

Utilizes procedures for installation and removal of avionics electronic equipment on aircraft. Student follows 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. A continuation of Installation Project 2.

## **10-486-160 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.

## **10-486-161 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.

## **10-486-163 Aircraft Electrical Systems (3 cr.)**

Introduces aircraft electrical systems and component operation. 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.

## **10-486-166 Maintenance Forms & Records (1 cr.)**

Focuses on understanding and applying FAA regulations and requirements for aircraft maintenance records. Student learns record entry procedures and required details for completion of FAA forms, documentation for major repairs, inspections and weight & balance records. Work orders, parts tagging, time controlled parts and inspection monitoring will be identified.

## **10-486-167 Technical Drawings & Diagrams (1 cr.)**

Prepares students to 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.

## **10-486-168 Human Factors (1 cr.)**

Introduces maintenance resource management issues. The study of airline safety, human error in maintenance, human factors fundamentals, worker safety, communication, team work, situation awareness, and performance management.

**10-486-169 Avionics Navigational Systems (3 cr.)**

Studies integrated navigational avionics systems used in various aviation aircraft. VHF Omni directional Range, Instrument Landing Systems, Marker Beacon, Global Positioning System and Distance Measuring Equipment are emphasized. Class provides in-depth, hands-on training in identifying, isolating, repairing and calibrating avionics systems.

**32-486-310 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.

**32-486-315 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.

**32-486-316 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.

**32-486-322 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.

**32-486-323 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.

**32-486-326 Structural Materials (3 cr.)**

Teaches the student 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.

**32-486-327 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.

**32-486-331 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.

**32-486-333 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.

**32-486-337 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.

**32-486-339 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.

## 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.

**10-501-104 Culture of Healthcare (2 cr.)**

Introduces the culture of healthcare for students interested in working in various healthcare settings. Learners examine professionalism, interpersonal and written communication skills, problem-solving skills and patient privacy and confidentiality issues as they relate to healthcare.

# Course Descriptions

## **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.

## **10-501-153 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.

## **502 Cosmetology Apprenticeship**

### **10-502-101 Aesthetic Spa Services 1 - Beginner (2 cr.)**

Introduces students to working on clients in a spa setting. Students schedule appointments, consult with clients, analyze various skin types, perform facial treatments including hair removal. Students incorporate the use of facial machines during treatments. Students recommend products and perform makeup applications.

### **10-502-102 Aesthetic Spa Services 2 - Intermediate (2 cr.)**

Build customer service skills in a spa setting. Schedule appointments, perform client consultations, analyze various skin types and perform facial treatments. Students continue to recommend products and perform makeup applications and hair removal. Students also learn the fundamental skills required for lawful and effective salon practice and management, including Wisconsin state laws and regulatory rules. Students will start a business plan and learn basic job seeking skills.

### **10-502-104 Aesthetic Treatments (3 cr.)**

Build on previous skills and knowledge to perform advanced techniques such as deep cleansing galvanic facials, extractions, high frequency, microdermabrasion and chemical exfoliation. Newer technologies including ultrasonic spatulas, dermafiles and microcurrent also are introduced.

### **10-502-105 Aesthetician Mock Board Prep and Assessment (1 cr.)**

Prepares students for their State Board Licensing Exam. State curriculum and administrative code is examined and discussed. Students also identify the limitations of their license as it relates to the medical field.

## **10-502-107 Advanced Aesthetic Treatments and Massage (1 cr.)**

Develop skills in a variety of spa treatments, including the use of stones for facial massages and lymphatic drainage and body treatments. Learn relaxing body massage, aromatherapy and reflexology to relieve tension and enhance the health and condition of the skin.

## **10-502-108 Facial Treatments (3 cr.)**

Explore the theory and practical skills of facials. Study basic anatomy and physiology of the body, skin types and conditions. Learn to perform beginning skin analysis and consultations skills. Study cosmetic chemistry principles and apply skin care products and treatments. Master basic facial massage manipulation and treatment room set up.

## **10-502-109 Hair Removal Techniques (1 cr.)**

Study theory and practice hair removal techniques for both men and women. Learn how to remove hair from the face, underarms, legs, bikini and back by performing services on models, and understand contraindications to hair removal for clients.

## **10-502-110 Make-up Techniques (1 cr.)**

Discover makeup theory and the law of color while performing basic, special occasion, and theatrical makeup applications on mannequins, peers, and models. Students learn to use proper infection control procedures to prevent the spread of disease. Students explore the state board basic competency requirements for makeup on mannequins.

## **10-502-111 Aesthetic Theory (1 cr.)**

Apply infection control practices to keep the spa and medical setting clean and customers safe. Study Wisconsin Statutes and Administrative Codes relating to safety and sanitation in a variety of Aesthetic settings. Discuss the differences in spa ecology practices between spa and medical settings, including the disposal of medical waste.

## **10-502-123 Aesthetic Spa Services 3 - Advanced (2 cr.)**

Provide aesthetic services to guests in a spa setting, including deep cleansing galvanic current, light therapy, microdermabrasion, and chemical exfoliation along with extractions. Students begin body treatments, scrubs and wraps for health and wellness and learn about state board exam expectations. Students also learn the advanced skills required for salon management related to Wisconsin state laws. Students will complete a business plan and advance their job seeking skills.

## **10-502-156 Aesthetic Spa Sciences (2 cr.)**

Introduces the science of aesthetic services including an introduction to electricity and anatomy. Discover life skills for success. Learn to describe the chemical composition of salon/spa products and determine the effects on the hair and skin. Apply sanitation practices to the salon/spa setting.

## **31-502-301 Salon Theory and Ecology (2 cr.)**

Learn theoretical concepts in microbiology and decontamination, general chemistry, micro-hair structure and anatomy as related to the profession. Sanitation and infection control practices will be taught to keep the salon clean and customers safe utilizing the Wisconsin Statutes and Administrative Codes relating to safety and sanitation in the salon.

## **31-502-302 Basic Cut and Style (4 cr.)**

Utilize cutting techniques to develop a plan to achieve a desired haircut/style. Develop skills in wet and dry hairstyling to include using finger waves, pin curls, roller sets, curling and flattening the hair in conjunction to the cuts performed.

## **31-502-303 Basic Texture and Color (5 cr.)**

Focuses on the chemicals used and the effects they have in restructuring the hair during permanent wave, chemical relaxing and hair color services. Practice the steps involved in a chemical service including safety procedures. Study the color wheel and the "Law of Color". Identify the differences between different chemicals.

## **31-502-304 Salon Client Services 1 - Introductory (3 cr.)**

Practice consultation and analysis skills in a salon atmosphere. Study how personality, teamwork and ethics contribute to both personal and professional success within the salon business. Provide services under the supervision of an instructor. Competencies will include nail services, cutting, styling, scalp treatments, hair coloring and chemical texturizing.

## **31-502-305 Advanced Cut and Style (4 cr.)**

Perform men's haircuts including grooming techniques. Safety and infection control will be practiced throughout the course. Study the composition and construction of a variety of wigs and hairpieces including hair replacement. Full-service haircuts and styles will be performed; including trends in haircutting and styling.

# Course Descriptions

## **31-502-306 Advanced Texture and Color (4 cr.)**

Incorporate consultation and analytical skills to choose the best product and techniques to meet the needs of a client. Advanced texture and color techniques will be assessed. Observe and research trends and techniques in chemical service within a salon setting.

## **31-502-307 Facials and Skin Care (2 cr.)**

Study the function, composition and structure of all types of skin. Basic competency will be met for hair removal services; facial service to include performance of a massage and makeup application following all safety and infection control guidelines. Study of advanced skin care.

## **31-502-308 Salon Business and Professional Development (1 cr.)**

Develop a personal plan for success in the industry including a portfolio including a resume, cover letter, and other pictures to use when seeking employment. Computer work, marketing and professional observation will be included.

## **31-502-309 Salon Client Services 2 - Intermediate (3 cr.)**

Provide services to salon guests under the direct supervision of an instructor. A full menu of services will be provided.

## **31-502-310 Salon Client Services 3 - Advanced (3 cr.)**

Integrate the theory, practice and reflection of coursework by providing services to guests. Services will be offered based on the meeting the minimum competency requirements.

## **31-502-311 Cosmetology State Board Prep and Assessment (2 cr.)**

Review all state board required procedures and exam guidelines. Practical and written assessment of all state board subjects. Prepare and submit materials for state board exams.

## **31-502-312 Nail Services (3 cr.)**

Students develop nail service skills while working with customers in a salon environment and apply knowledge and skills learned in related theory classes to hands-on work experience. Students perform all manicure and pedicure services as well as nail extension services.

## **31-502-330 Salon Management Skills (2 cr.)**

Introduces the fundamental skills required for lawful and effective salon practice and management, including Wisconsin state laws and regulatory rules.

## **31-502-374 Nails (2 cr.)**

Study the structure, growth, diseases, disorders and conditions of the nail. Practice infection control procedures to protect the client and practitioner. Study the anatomy of the hand, arm, foot and leg to effectively apply massage techniques relating to nail services. Perform manicure and pedicure services to include polish application and massage techniques.

## **31-502-378 Cosmetology Sales & Marketing (1 cr.)**

Review product lines to best prescribe beneficial products to meet the needs of each client. Practice successful sales techniques. Aspects of designing effective retail displays will be part of this course.

## **503 Fire Technology**

### **10-503-103 Hazmat Awareness & Operations (2 cr.)**

Identify the classification hazardous materials, determine the nature and extent of the problem, and protect first responders, nearby persons, and the environment from the effects of the release.

### **10-503-105 Technical Rescue (3 cr.)**

Exposes the student to labor-intensive requirements in team-based technical rescue. Students will be trained in rope rescue, confined space rescue, and trench rescue to the operations level.

### **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.

### **10-503-142 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.

**10-503-149 Hazardous Materials Technician (3 cr.)**

Provides a student, through this 90-hour course, with the information and skills needed to meet the training requirements and knowledge cited in NFPA 1072, Awareness, Operations (including mission specific competency) and Technician levels. The student will learn to recognize, evaluate, mitigate and control incidents involving the release of hazardous materials. This course meets OSHA 1910.120 and EPA 165.5. and prepares a student for IFSAC and ProBoard certification.

**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.

**10-503-156 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 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).

**10-503-195 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

**10-504-103 Cultural Diversity In Criminal Justice (3 cr.)**

Explore the impact of varied cultures on American policing, courts, and corrections.

**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.

**10-504-108 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.

# Course Descriptions

## **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.

## **10-504-117 Employment Strategies in Public Safety (1 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.

## **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.)**

Allows students to work alongside Green Bay Police Officers and Brown County Sheriff's Deputies working as game day Security Staff for the Green Bay Packers and special events; patrolling Lambeau Field. Exposes students to on-the-job situations, as it relates to developing communication skills and situational awareness, when dealing with the public.

## **10-504-120 Cultural Competence and Ethics in Criminal Justice (3 cr.)**

Provides a basic understanding of the theoretical foundations of ethical thoughts and cultural competence. Diverse ethical perspectives and cultural competence practices 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.

## **10-504-122 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.

## **10-504-122DE 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.

## **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.

## **10-504-131 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.

## **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.

**10-504-146 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.

**10-504-146DE 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.

**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, employee theft, computer security, consumer fraud, supply chain security, environmental compliance, loss prevention, business disaster recovery, substance abuse, negligent hiring and other relevant issues.

**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.

**10-504-159 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.

**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.

**10-504-178 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.

# Course Descriptions

## **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.

## **10-504-181 Public Safety Fitness and Wellness (3 cr.)**

Demonstrates student fitness techniques and wellness topics to prepare candidates for public safety careers. Instruction related to nutrition, disease, stress and injury prevention will be provided.

## **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.

## **10-504-194 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.

## **10-504-200 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.

## **10-504-203 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.

## **10-504-207 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.

## **10-504-902 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.

## **10-504-902D1 Criminal Law - National (3 cr.)**

Examines the general principles of criminal law and the elements of crime. Students attempt to recognize when a crime has occurred, focusing on statutes that are most often used by a security professional. Students also work with the criminal statutes from the state in which they reside.

## **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.

### **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.

## **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.

# Course Descriptions

## **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.

## **10-508-113 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.

## **10-508-120 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.

## **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**

### **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.

## **31-509-304 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.

## **31-509-305 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.

## **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.

## **31-509-307 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.

## **31-509-310 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. CAAHEP/MAERB required Practicum - 160 minimum hours up to 216 hours.

## **512 Surgical Tech**

### **10-512-125 Intro to Surgical Technology (4 cr.)**

Provides the foundational knowledge of the occupational environment. Principles of sterilization and disinfection are learned. Surgical instruments are introduced. Preoperative patient care concepts are simulated. Lab practice is included.

### **10-512-126 Surgical Tech Fundamentals 1 (4 cr.)**

Focuses on preparing the patient and operating room for surgery. Principles of sterile technique are emphasized as the student moves into the scrub role. Lab practice is included.

### **10-512-127 Exploring Surgical Issues (2 cr.)**

Explores a variety of issues related to surgical technology. Emphasis is placed on becoming a professional member of the surgical team.

### **10-512-128 Surgical Tech Fundamentals 2 (4 cr.)**

Focuses on enhancing surgical technology skills while functioning as a sterile team member. Lab is included.

### **10-512-129 Surgical Pharmacology (2 cr.)**

Basic study of drug classifications, care, and handling of drugs and solutions, application of mathematical principles in dosage calculations, terminology related to pharmacology, anesthesia, and drugs used in surgery.

### **10-512-130 Surgical Skills Application (2 cr.)**

Provides a transition from the academic to the clinical setting. Learners integrate the surgical technologist skills as they apply to various surgical procedures.

### **10-512-131 Surgical Interventions 1 (4 cr.)**

Provides the foundational knowledge of surgical core and specialty procedures. Examines the pathophysiology, diagnostic interventions, health sciences, and surgical techniques for a variety of procedures.

### **10-512-132 Surgical Technology Clinical 1 (3 cr.)**

Apply basic surgical theories, principles, and procedural techniques in the operating room. Students begin to function as team members under the guidance of the instructor and authorized clinical personnel.

### **10-512-133 Surgical Technology Clinical 2 (3 cr.)**

Further experience in a clinical setting allows the student to continue to improve technical skills while accepting more responsibilities during surgical procedures.

# Course Descriptions

## **10-512-135 Surgical Technology Clinical 3 (3 cr.)**

Further experience in a clinical setting allows the student to continue to improve technical skills while accepting more responsibilities during surgical procedures.

## **10-512-136 Surgical Technology Clinical 4 (3 cr.)**

During this clinical course the student will function relatively independently. Serves as a transition from a student perspective to an employee by utilizing advanced skills for an entry level Surgical Technologist.

## **10-512-142 Surgical Interventions II (4 cr.)**

Expands knowledge of core and specialty surgical procedures by incorporating pathophysiology, diagnostic interventions, health sciences, and surgical techniques.

## **513 Laboratory Assistant**

### **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.

## **10-513-117 Advanced Lab Skills (2 cr.)**

Explores principles and hands on procedures performed in the clinical laboratory. You will perform quality control and utilize basic laboratory equipment to perform patient laboratory testing.

## **10-513-118 Medical Laboratory Assistant Clinical (3 cr.)**

Learn to prepare blood specimen collection and specimen processing in a clinical setting.

## **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.

## **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.

**10-513-170 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.

**10-514-178 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.

**10-514-184 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.

**10-514-189 OT Physical Rehabilitation Practice (4 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.

**10-514-190 OT Pediatric Practice (4 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

# Course Descriptions

## **30-514-301 Introduction to Activity Specialist (3 cr.)**

Outlines the role and responsibilities of the Activity Specialist. The student will explore service delivery models and organizations for the role of Activity Specialist. Ethical dilemmas will be explored and how the student may report them. Various professional forms of communication in this role will be demonstrated by the student through the course as well as obtaining relevant information from records.

## **30-514-302 Conditions Across the Lifespan (3 cr.)**

Explores various mental and physical conditions that may occur throughout the lifespan. Emphasis is placed on understanding how the condition may affect a person's ability to participate in activities and how activities can be adapted to allow for participation.

## **30-514-303 Activity Program Coordination (3 cr.)**

Focuses on the fundamentals of the Activity Specialist in development, implementation and coordination of various activities and events for individuals, groups and organizations. Learn organizational techniques as well as planning and scheduling, marketing, promoting activity events. The role of Activity Specialist in the area of leadership with personnel and volunteers will be addressed as well. Also explores the need for policy development, implementation, and follow through in the areas of safety and equipment to name a few.

## **30-514-304 Activity Facilitation I (3 cr.)**

Learn the foundation skills necessary in order to plan, facilitate and evaluate group activities across the lifespan for clients living with physical, emotional, cognitive and sensory needs in community-based settings.

## **30-514-305 Activity Facilitation II (3 cr.)**

Review the foundations skills learned in Activity Facilitation I and will have the opportunity to perform the skills of planning, facilitating and evaluating group activities in community-based settings.

## **30-514-306 Activity Specialist Capstone (2 cr.)**

Consult with a faculty member to develop a hands-on independent study in a service setting aligned with curriculum outcomes. The student will be evaluated on their performance of assuming the roles and responsibilities of an Activity Specialist in the context of the assigned setting.

## **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.

## **522 Educational Services**

### **10-522-102 EDU: Techniques in Reading (3 cr.)**

Students learn techniques to support reading development for all learners. Students learn techniques to promote phonological awareness, phonemic awareness, and phonics. Students also learn strategies to promote word analysis, vocabulary, comprehension and reading fluency skills.

### **10-522-103 EDU: Introduction to Educational Practices (3 cr.)**

Students analyze preK-12 education in the United States, determine roles and responsibilities of school personnel, and explore current trends and best practices. Students identify how students learn and the foundations of lesson planning. Students analyze assessment strategies, classroom management, and techniques for supporting learners.

### **10-522-104 EDU: Technology in Education (3 cr.)**

Students develop the knowledge and skills to use trending classroom technologies and gain experience creating and using web tools including portfolios. Students create presentations for educational environments and identify ISTE Standards.

### **10-522-105 EDU: Behavior Management (3 cr.)**

Students evaluate models of behavior management, analyze social emotional learning, and explain the importance of proactive management techniques. In addition, students evaluate models of behavior management, analyze behavior and analyze the influence of Adverse Childhood Experiences on behavior in order to focus on developing skills to assist in empowering children to take an active role in self-control and classroom management.

### **10-522-106 EDU: Child and Adolescent Development (3 cr.)**

Provides an overview of physical, motor, perceptual, cognitive, social/emotional and growth and development birth through adolescence. Analyzes social, parental, cultural, brain, and economic influences on development.

**10-522-107 EDU: Overview of Special Education (3 cr.)**

Students examine a historical overview of special education and special education law including special education disability categories as defined by the Individuals with Disabilities Education Act (IDEA). Students explore state and federal qualification special education criteria and societal responses to students with disabilities. Students examine the impact of a student with disabilities on family dynamics and the role school personnel play in supporting students with disabilities.

**10-522-112 EDU: Equity in Education (3 cr.)**

Students analyze personal culture, explore cultural constructs, evaluate cultural bias in educational materials and analyze strategies to support English Learners. Students examine diversity in the classroom and develop techniques for supporting equity in the learning environment. In addition, students collaborate to identify service needs in the community and demonstrate professional collaboration skills through participating in a service learning project.

**10-522-114 EDU: Techniques in Language Arts (3 cr.)**

Students explore various genres of children's and young adult literature. Students examine techniques used to support learners in reading and writing and strategies for assessing learners in the process. Students examine techniques to support learners with reading and writing across the curriculum.

**10-522-118 EDU: Techniques in Math (3 cr.)**

Students learn key terminology and research-based strategies to support learners in math domains: numbers, base ten operations, algebraic thinking, geometry, probability/statistics and measurement and data. Current practice including manipulatives, problem solving and assessment will be covered within the framework of state and national standards.

**10-522-119 EDU: Techniques in Social Studies (3 cr.)**

Students analyze current content in social studies education as recommended by the National Council for the Social Studies and design learning opportunities for the five components of social studies: Geography, History, Culture and Society, Civics and Government, and Economics. Students explore factors that influence social studies instruction.

**10-522-120 EDU: Techniques in Science (3 cr.)**

Students are introduced to the content and processes of teaching science. Students explore science processes, strategies, procedures, assessment options and factors affecting science learning. Students study and practice strategies for assisting with group and individual activities in science. This course provides a solid foundation in the concepts and models of hands-on, student-centered science and its assessment as described in WI DPI Science Standards and Next Generation Science Standards.

**10-522-124 EDU: Supporting Students with Disabilities (3 cr.)**

Students identify research-based interventions for learners in categories defined by the Individuals with Disabilities Education Act (IDEA). Students interpret Individualized Educational Programs and examine special education related services available for learners. Students collect data to document student behavior and academic performance and recommend program adaptations and accommodations for students with disabilities while applying the concepts of least restrictive environment and inclusion.

**10-522-129 EDU: Practicum 1 (3 cr.)**

Students apply the skills learned in previous program courses in a school setting while under the supervision of a Department of Public Instruction certified teacher. Students support learners while demonstrating professionalism. Students begin the reflective process.

**10-522-131 EDU: Practicum 2 (3 cr.)**

Students apply the skills learned in previous program courses in a school setting while under the supervision of a Department of Public Instruction certified teacher. Students support learners and while demonstrating professionalism. Students apply job search skills.

**10-522-141 Intro to Career & Technical Education Inst. (1 cr.)**

Covers the history of Technology and Engineering Education, current trends, and the future of the field. Students will gain a broad understanding of curricular framework, course development methodology, STEM education philosophy, and how Technology and Engineering fits into the broader aspect of K-12 and post-secondary education.

**10-522-142 Occupational Co-op (1 cr.)**

Provides students with professional experience in an occupational field related to Career and Technical Education. Participants in this course are responsible for gaining employment in either: manufacturing, maintenance, automotive repair, truck repair, construction, information technology, or engineering related fields.

# Course Descriptions

## **10-522-143 Tech Ed Teaching Practicum 1 (1 cr.)**

Students learn about and apply pedagogy in an actual K-12 technical education setting while under the supervision of a Department of Public Instruction certified teacher. Explore the Wisconsin Standards for Career and Technical Education (CTE), demonstrate professional behaviors, and observe the integration of rigorous academic and technical standards in CTE. Observe integration of either: Career and Technical Student Organizations (CTSOs), Dual Credit Options, or Work-Based Learning in a contemporary K-12 CTE program.

## **10-522-144 Tech Ed Teaching Practicum 2 (1 cr.)**

Serves as a capstone course in the Associate in Applied Science degree program. Students will be placed or will be working in a K-12 setting with children and create a portfolio that prepares students for the Wisconsin Department of Public Instruction Experienced-Based Licensure for Technical and Vocational Education Subjects form PI-1623. In this course, students will be performing quality technical and pre-engineering education, applying knowledge of child development and positive guidance, utilizing observation and assessment techniques, and assessing developmentally appropriate Career and Technical Education (CTE) activities while under the supervision of a Department of Public Instruction certified teacher.

## **525 Neurodiagnostic Technologist**

### **10-525-101 NDT: EEG Basic (3 cr.)**

Develop understanding in 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 NDT: Neuroanatomy (3 cr.)**

Explores advanced neuroanatomy of the central and peripheral nervous system. Includes the study of neural tissue, spinal cord, spinal nerves, spinal reflexes, cranial nerves, sensory and motor pathways, higher order functions of the Autonomic Nervous system. Identify roles that each system plays in the field of Neurodiagnostics.

### **10-525-103 NDT: Nerve Conduction Studies Basic (3 cr.)**

Introduces the student to the field of NCS and its use in the clinical setting. Emphasis will be placed on Anatomy and Physiology, basic electronics, instrumentation and stimulation, trouble shooting, proper recording techniques and common tests performed.

### **10-525-104 NDT: EEG Advanced (4 cr.)**

Acquire advanced 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 NDT: Evoked Potentials Basic (2 cr.)**

Introduces the fundamentals of evoked potentials including sensory pathways, digital instrumentation, obligate wave forms and technical writing.

### **10-525-107 NDT: Theory (3 cr.)**

Explores the clinical correlates for EEG, NCS and EP. Correlate symptoms of trauma, metabolic/toxic/infectious diseases, demyelinating diseases, congenital/developmental disorders, myopathies, peripheral nerve disorders and more.

### **10-525-109 NDT: Nerve Conduction Study Advanced (3 cr.)**

Acquire advanced knowledge of NCS procedures and takes an in-depth look at the brachial and lumbar plexuses, neuromuscular junction disorders, neurological diseases, repetitive nerve stimulation studies, blink reflexes and less common NCS tests performed.

### **10-525-116 NDT: Introduction to Practicum (2 cr.)**

Observe and understand Neurodiagnostic work-flow in the clinical setting. Students will be able to perform Electroencephalograms (EEG's) and Nerve Conduction Studies (NCS's) in the clinical setting. Observe and eventually perform Electroencephalograms (EEG's) and Nerve Conduction Studies (NCS's) in a clinical setting with supervision.

### **10-525-117 NDT: Practicum 1 (3 cr.)**

Perform Electroencephalograms (EEG's) and Nerve Conduction Studies (NCS's), Evoked Potential (EP's) and long term monitoring (LTM's) with direct supervision in the clinical setting.

### **10-525-118 EEG Symposium (1 cr.)**

Emphasizes reevaluating difficult Electroencephalography (EEG) topics. Students will examine and review areas such as neonates, age-related patterns, EEG pattern recognition (normal and abnormal), filters, polarity and localization, neuro-anatomical structures and clinical correlates.

### **10-525-119 Intro to Intraoperative Neuromonitoring (1 cr.)**

Integrate the fundamentals of clinical Evoked Potentials (EP's) and learn how these are applied during Intraoperative Neuromonitoring (IOM).

**10-525-120 NDT: Practicum 2 (5 cr.)**

Application and performance of skills and knowledge on the techniques of recording quality Electroencephalograms (EEG's), Polysomnogram (PSG), Long Term Monitoring (LTM), Nerve Conduction Studies (NCS), and Evoked Potentials (EP's) with minimal supervision in the clinical setting.

**10-525-121 Principles of Polysomnography (2 cr.)**

Acquire the knowledge and skills necessary to perform sleep studies, including recording and interpreting events observed during sleep. Treatment of sleep related disorders and discuss the major sleep and arousal disorders based on age-specific criteria.

## 530 Health Information

**10-530-159 Healthcare Revenue Management (3 cr.)**

Prepares learners to compare and contrast healthcare payers and evaluate the reimbursement cycle and compliance with regulations. Learners assign payment classifications with entry level proficiency using computerized encoding and grouping software.

**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.

**10-530-196 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.

# Course Descriptions

## **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.

## **10-530-199 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 Emergency Medical 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.

## **10-531-169 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. The course does include CPR certification.

## **10-531-301 Emergency Med Resp and Emergency Med Tech - Part 1 (2 cr.)**

This is part one of a two-part course that provides education as an emergency medical responder and emergency medical technician. Completion of part one provides eligibility to sit for the certification exam for emergency medical responder.

## **10-531-302 Emergency Med Resp and Emergency Med Tech - Part 2 (3 cr.)**

This is part two of a two-part course that provides education as an emergency medical responder and emergency medical technician. Completion of both part one and two provides eligibility to sit for the certification exam for emergency medical technician.

## **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 complied 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.

# Course Descriptions

## **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.

## **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 lifestyle 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.

**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.

# Course Descriptions

## **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.

## **10-543-118 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; 10-543-128, 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. During the 120 hour, Wisconsin department of health services approved program, students will be required to demonstrate the following skills: communication, basic nursing assistant and personal care skills, attention to client's rights; and care of clients with dementias. Upon successful completion of the program, the student is eligible to take the Wisconsin Nursing Assistant competency evaluation for employment in nursing homes, hospitals, home health agencies, hospices, CBRF's, assisted living centers and homes for the developmentally disabled.

## **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.

**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 Counseling & Mental Health 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.

# Course Descriptions

## **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.

## **10-550-124 SUDC Clinical Preparation (2 cr.)**

Prepares the learner for the internship experience. Resumes will be developed and interviewing techniques explored for placement positions. The learner will complete the application process with the Department of Safety and Professional Services (DSPS) for their SAC-IT credential. This course will explore emerging trends that are occurring with substances, treatment methods, and facilities within the substance use counseling disorder profession.

## **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.

## **10-550-134 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.

**10-550-200 Introduction to the SUDC Profession (3 cr.)**

Explore characteristics that are incorporated into substance use counseling and practice. Determine personal values, beliefs, strengths and weaknesses. Analyze the eight practice dimensions used to effectively treat substance use disorders: Clinical Evaluation; Treatment Planning; Referral; Service Coordination; Counseling; Patient, Family and Community Education; Documentation; and Professional and Ethical Responsibilities. Evaluate legal and ethical issues surrounding substance use counseling. Evaluate Information about Wisconsin licensing for substance use counseling.

**10-550-201 Understanding Substance Use (3 cr.)**

Explore the bio-psych social dynamics of substance use. Examine treatment approaches, models, and screening criteria. Examine substances of abuse, history of SUDs, and their impact on the individual and society.

**10-550-202 Foundations of Case Management (3 cr.)**

Introduction to case management techniques and processes. Incorporates intake assessment techniques, service planning techniques, referral processes, coordination of care, and discharge processes determined by a multidisciplinary team approach. Includes client self-determination and autonomy. Incorporates clinical documentation requirements and processes.

**10-550-203 Overview of Mental Health Disorders (3 cr.)**

Provides an overview to the history, diagnosis, treatment strategies, legal and ethical considerations, and documentation of mental health conditions. Focus is on understanding the mental health conditions that co-occur with substance use disorders.

**10-550-204 Group Facilitation (3 cr.)**

An introduction to theory and practice of group dynamics and processes. Includes ethical considerations, effective group leadership, and stages of group development. Also includes demonstration of group facilitation skills, clinical documentation, co-facilitation strategies, reflective practitioner techniques, and group formation.

**10-550-205 Counseling Theory (3 cr.)**

Summarize the history of, and explore the primary concepts within, the major approaches to counseling. Explore the empirical foundations of each theory. Examine application of theories to counseling. Review specific techniques of each theoretical approach. Examine the role of the counselor within each theoretical approach. Explore the role of the counselor, the scope of practice, and the ethical implications in counseling.

**10-550-206 Introduction to Interviewing and Counseling Skills (3 cr.)**

Analyze foundational skills in the counseling relationship. Analyze the stages of the helping processes and the roles professionals play in the processes. Analyze the importance of establishing therapeutic relationships. Apply basic counseling techniques. Apply interviewing and counseling skills through mock counseling sessions and personal experience reflections. Examine issues of boundaries and ethics.

**10-550-207 Psychopharmacology (3 cr.)**

Overview of psychopharmacology including drug categorization history, drug categorization, and drug classification. Includes analysis of neurophysiology of the brain and endocrine system, effects of substances on the body, analysis of delivery systems, and analysis of medical aspects of SUDs. Also includes etiology of addiction, psychopharmacological aspects of withdrawal management, analysis of medications used to treat SUDs and mental health disorders, and SUD medical impacts on the body.

**10-550-208 SUDC Assessment, Diagnosis and Treatment (3 cr.)**

Explore the core components of substance use disorder treatment. Apply the core practice dimensions of Substance Use Disorder Counseling. Evaluate process for SUD clients for the purpose of developing treatment plans and documenting the treatment process.

**10-550-209 Family Systems (3 cr.)**

Provides a broad understanding of family systems theory and practice relevant to the human services field. Focus is on evaluating the communication and interaction patterns and applying interventions and strategies.

# Course Descriptions

## **10-550-210 Boundaries and Ethics for the Helping Professions (3 cr.)**

Evaluate the ethical codes of the helping professions. Examine professional boundaries related to the helping professions. Incorporate ethical standards into decision making processes. Examine ethical considerations related to professional standards for the helping professions. Examine ethical considerations related to state and federal regulations for the helping professions. Examine the ethical considerations related to professional self-care.

## **10-550-211 Clinical Experience I (3 cr.)**

Immersive experience with an agency including supervised practice in the 12 core functions. Integrates the knowledge, theory, skills, and professional behaviors learned in the two previous semesters of coursework. Emphasis on gaining firsthand knowledge and refine previously acquired skills to gain a greater understanding of self and the helping professions.

## **10-550-212 Clinical Experience II (3 cr.)**

Immersion experience with an agency including supervised practice in the 12 core functions. Integrates the knowledge, theory, skills, and professional behaviors learned in previous courses and refined in Clinical I immersion experience. Emphasis on applying previously acquired knowledge and skills and gaining a greater understanding of self and the helping professions through firsthand experience.

## **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.

### **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.)

### **10-602-105 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.

### **10-602-111 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.

### **10-602-113 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.

**10-602-120 Fuel Systems - ASEP (3 cr.)**

Focuses on the entire General Motors gasoline and diesel fuel systems, including fuel tanks, gauges, fuel pump modules, fuel quality and fuel injection. Other topics covered will be the operation of all fuel-related components, emission related computer controlled sensors, 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.

**10-602-125 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.

**10-602-126 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.

# Course Descriptions

## **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.

## **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.

## **10-602-137A Dealership Co-op 3 - ASEP (A) (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.

## **10-602-141A Dealership Co-op 1 - ASEP (A) (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.

## **10-602-144 Manual Transmission On Campus (3 cr.)**

Focuses on developing the skills needed to diagnose and overhaul clutches, manual transmissions/transaxle, differentials, four-wheel drive/all-wheel drive, and drive axles.

## **10-602-146 Manual Transmission Co-op (1 cr.)**

Provides students with work experience on customer vehicles at local vehicle service centers, focusing on manual transmission and drivetrain.

## **10-602-148 GM ASEP Automatic Transmission/Transaxle (2 cr.)**

Designed to give an ASEP student the basic knowledge and skills needed to service General Motors automatic transmissions/transaxles. Principles of hydraulics, diagnostics, and electronic controls applied to GM automatic transmissions are covered. Students overhaul a variety of modern GM automatic transmissions.

## **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.

## **10-602-164 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.

**10-602-167 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.

**10-602-170 Auto Transaxles & Transmissions On Campus (3 cr.)**

This course will provide the student with the skills and knowledge to diagnosis and overhaul automobile automatic transmissions. Shop activities will include disassembly, inspection, and reassembly of automatic transmissions used in both front and rear wheel drive automobiles.

**10-602-171 Auto Transaxles & Transmissions Co-op (1 cr.)**

Provides students with work experience on customer vehicles at local vehicle service centers, focusing on automatic transaxles and transmissions.

**10-602-172 Powertrain Management 1 On Campus (3 cr.)**

Focuses on developing the skills needed to diagnose engine control systems. Emphasis is placed on diagnostic procedures and the problem-solving techniques associated with automotive engine performance and drivability.

**10-602-173 Powertrain Management 1 Co-op (1 cr.)**

Provides students with work experience on customer vehicles at local vehicle service centers, focusing on powertrain management.

**10-602-177 Auto Maintenance & Light Repair 2 On Campus (3 cr.)**

Focuses on developing the skills needed to diagnose 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.

**10-602-178 Auto Maintenance & Light Repair 2 Co-op (1 cr.)**

Provides students with work experience on customer vehicles at local vehicle service centers, focusing on Brake systems.

**10-602-179 Engine Mechanical On Campus (3 cr.)**

Focuses on developing the skills needed to diagnose, service and repair internal combustion engines. Emphasis is placed on out-of-vehicle engine repair including overhaul procedures.

**10-602-180 Engine Mechanical Co-op (1 cr.)**

Provides students with work experience on customer vehicles at local vehicle service centers, focusing on engine mechanical.

**10-602-181 Auto Maintenance & Light Repair 3 On Campus (3 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 electrical and electronic systems, including batteries, starting, charging, and lighting systems, and computer control systems.

**10-602-182 Auto Maintenance & Light Repair 3 Co-op (1 cr.)**

Provides students with work experience on customer vehicles at local vehicle service centers, focusing on Electrical systems.

**10-602-183 Auto Maintenance & Light Repair 4 On Campus (3 cr.)**

Focuses on developing the skills needed to diagnose 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.

**10-602-184 Auto Maintenance & Light Repair 4 Co-op (1 cr.)**

Provides students with work experience on customer vehicles at local vehicle service centers, focusing on steering and suspension systems.

**10-602-188 Automotive HVAC On Campus (3 cr.)**

Provides the student with the knowledge and skills needed to diagnose 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.

**10-602-189 Automotive HVAC Co-op (1 cr.)**

Provides students with work experience on customer vehicles at local vehicle service centers, focusing on HVAC diagnosis and repair.

## 605 Electronic Technology

**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.

# Course Descriptions

## **10-605-111 AC Circuits 2-Electronics/EET (1 cr.)**

Covers the application of basic theory to AC circuits. Topics include sine-wave description, reactance, phase and fundamental AC power concepts. RC, RL and RLC circuits using complex numbers are analyzed. Laboratory and computer analysis activities are performed to enhance the theory.

## **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.

## **10-605-131 Digital Electronics 2 - Electronics/EET (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.

## **10-605-134 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.

**10-605-145 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.

**10-605-154 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.

**10-605-165 Electronic Communications 1 (1 cr.)**

Covers the basics of electronic communications, to include protocol, wireless transmission, and application. Also covers industrial networks and hardware to include cables and connections.

**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.

# Course Descriptions

## 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.

### 10-606-114 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.

### 10-606-119 Statics and Strength of Materials (3 cr.)

Uses mathematical concepts to determine how forces are distributed through trusses and other rigid structures. Friction and calculation of centroids and moment of inertia are covered. Algebra and other applications of mathematics are used extensively.

### 10-606-121 Elements of Machine Design (3 cr.)

Examines a variety of problems involving the principles of design. Topics include direct stress, strain, thermal expansion and stress, beam selection, bending moments, torsion, Mohr's circle, combined stress, column buckling, 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.

## **10-606-139 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.

## **10-606-141 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.

## **10-606-151 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.

# Course Descriptions

## **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.

## **10-606-161 Introduction to AutoCAD (2 cr.)**

Covers the very basics of AutoCAD - introduction to the user interface, basic drawing commands, basic editing commands, and basic viewing commands for making two dimensional (2D) drawings. Layer management, object properties, extracting information from the drawing, plotting and layouts, advanced annotation, creating and modifying blocks are covered. 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.

## **10-606-190 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.

### **10-609-173 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 Pneumatics 1 (1 cr.)**

Provides an introduction to fundamental principles and laws of fluid power, with a focus on pneumatics. Laboratory activities are performed to verify the theory.

### **10-620-112 Pneumatics 2 (1 cr.)**

Introduces advanced pneumatic and electropneumatic systems. Students examine how pneumatic components operate and how they interact in industrial systems. Laboratory activities are performed to verify the theory.

**10-620-113 Hydraulics 1 (1 cr.)**

Provides an introduction to fundamental principles and laws of fluid power, with a focus on hydraulics. Laboratory activities are performed to verify the theory.

**10-620-114 Hydraulics 2 (1 cr.)**

Introduces advanced hydraulic and electrohydraulic systems. Students examine how hydraulic components operate and how they interact in industrial systems. Laboratory activities are performed to verify the theory.

**10-620-131 Electrical Power Distribution 1 (1 cr.)**

Introduces electrical work hazards and basic safe work practices. Students learn to recognize, evaluate, and control electrical hazards, and OSHA Lockout/Tagout procedures and NFPA 70E safety training are introduced.

**10-620-132 Industrial Electrical Applications (1 cr.)**

Introduces the National Electrical Code as it applies to safe installation of electrical wiring and equipment. This includes motor design, wiring methods, and fusing of automated systems.

**10-620-142 Motors and Drives 2 (1 cr.)**

Introduces AC Generators, Three Phase, and Single Phase motors. Starting methods for AC motors, including AC Drives, will be introduced. Control wiring and reversing circuits will also be introduced. Students will wire for Synchronous and Induction motor operation.

**10-620-148 Motors and Drives 1 (1 cr.)**

Introduces DC motors and generators, along with DC Drives. Students will wire both separately-excited and self-excited DC generators. Counter Electromotive Force (CEMF) will be used to explain the operational principles of DC motors and generators. Various DC motor types will be introduced. Motor types include series, shunt, and compound motors.

**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.

**10-620-156 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.

**10-620-164 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.

**10-620-170 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.

**10-620-187 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.

# Course Descriptions

## **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.

## **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.

### **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.

## **10-621-129 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.



**10-621-134 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.

## 623 Manufacturing Operations

**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.

**10-623-104 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.

**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.

**10-623-114 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.

**10-623-119 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.

**10-623-131 Tool Design (3 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 CAD software to produce a variety of designs.

**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.

# Course Descriptions

## **10-623-137 Applied Statistical Analysis 1 (3 cr.)**

Covers the application of statistical methods used to make decisions based on data. Examples include measurement system analysis, control charts, and capability analysis.

## **10-623-138 Applied Statistical Analysis 2 (3 cr.)**

Continues the statistical methods covered in Applied Statistical Analysis 1. Topics include hypothesis testing, regression analysis, and designed experiments.

## **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.

## **10-623-155 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.

## **10-623-156 Manufacturing Cost Analysis (3 cr.)**

Covers cost estimating and financial analysis techniques employed in typical manufacturing and processing industries. Topics include product material and labor costing, justification of expenditures and capital equipment, make vs. buy analysis, and inventory costs. Also provides an understanding of soft costs and budgeting.

## **10-623-157 Problem Solving Methodologies (3 cr.)**

Covers structured problem solving methodologies including Six Sigma, 8D, and PDSA used to identify true root causes and implement effective corrective actions. The application of individual quality tools and techniques to support these methodologies is also covered.

## **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.

## **10-623-165 Project Application (3 cr.)**

Satisfies the final requirement of Six Sigma Green Belt certificate. The student shows mastery of the Six Sigma methodology through improvement of an existing process in the workplace.

## **10-623-166 Supplier Mgmt. & Performance Monitoring (3 cr.)**

Covers quality expectations between customer and supplier. Topics include product specifications, performance metrics, supplier assessment and approval, quality planning, and corrective action.

## **10-623-168 Electrical Concepts & Components (2 cr.)**

Covers basic electrical theory and terminology related to components commonly found in manufacturing systems. Students will understand the power requirements of equipment and the use of a multimeter and oscilloscope for basic troubleshooting of circuits.

## **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.

## **10-623-173 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.

**10-623-179 Industrial Engineering Essentials (3 cr.)**

Covers common topics in the Industrial Engineering profession including facilities planning, material handling, process documentation, line balancing, factory capacity and loading techniques, and process control.

**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.

**10-623-190 Lean Process Design (3 cr.)**

Introduces lean principles for manufacturing and assembly process design. Topics include time and motion studies, line balancing, ergonomics, work instructions, workstation design, mistake-proofing, changeover reduction, and risk analysis.

**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.

**10-623-192 Graphics & Software Applications (4 cr.)**

Students will learn engineering print reading, the use of 2D and 3D CAD software, and the use of spreadsheet software to organize, analyze, and display data. Additional topics include product data management and enterprise resource planning systems.

**10-623-193 Automation for MfgET (3 cr.)**

Introduces programmable logic controllers and industrial robotics. Students will learn programming basics with an emphasis on troubleshooting and maintenance after the installation of automated systems.

**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.

**10-623-199 Manufacturing Processes for MfgET (3 cr.)**

Covers the manufacturing systems and processes employed to convert materials into products. Includes process planning and related manufacturing engineering functions. Incorporates hands-on experience with manufacturing processes and basic metrology.

## 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 including flow chart and pseudocode programming. Students will create and troubleshoot programs.

**10-628-113 Electronic Construction Applications (1 cr.)**

Introduces industrial control panel design, layout, mounting, and wiring of industrial relays, push buttons, pilot lights, plc, fuses, transformers, 3 phase motor, and motor starters are applied. Quality installation and NEC standards are emphasized throughout the course.

# Course Descriptions

## **10-628-140 Intro to Cell Integration (1 cr.)**

Introduces industrial communication between safety relays, safety controllers, and light curtain's, area scanners, vision systems, robots and Programmable Logic Controllers (PLC). Students create documentation for reference in Cell Integration.

## **10-628-141 Cell Integration (3 cr.)**

Covers automated manufacturing cell design and creation. Applies programmable logic controllers, robotics, sensors, motion controls, drives, vision systems, and industrial safety hardware. Students create electrical schematics, wire, program, and troubleshoot an automated manufacturing cell.

## **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.

## **10-628-151 PLC 1 (1 cr.)**

Introduces Programmable Logic Controllers (PLC)s and RSLogix 500 Programming Software. The PLC hardware will consist of Allen Bradley products. Students use the RSLogix 500 programming software to create logical solutions for real world applications. The applications will require students to create, download, and debug programs in RSLogix 500.

## **10-628-152 PLC 2 (1 cr.)**

Introduces Programmable Logic Controllers (PLC)s and Studio 5000 (formerly RSLogix5000) Programming Software. The PLC hardware will consist of Allen Bradley products. Students will configure Ethernet communications to connect to the Allen Bradley PLC hardware. Students will use Studio 5000 programming software to create logical solutions for real world applications. The applications will require students to create, download, and debug their programs. Students will study industrial sensors and their uses. Students will wire and test sensor operations.

## **10-628-153 PLC 3 (1 cr.)**

Continues using the Allen Bradley PLC hardware platform with Studio 5000 programming software. Introduces Analog I/O and scaling for program interfacing. Scaling with math instructions, data handling with FIFO/LIFO instructions, and sequencer SQI/SQO instructions are all introduced.

## **10-628-154 PLC 4 (1 cr.)**

Introduces the IEC 61131-3 compatible languages within Studio 5000. Students are introduced to Structured Text (ST), Sequential Function Charts (SFC), and Function Block Diagrams (FBD). Additionally, students learn remote I/O.

## **10-628-155 PLC 5 (1 cr.)**

Introduces motion programming within Studio 5000. 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. The course introduces advanced PLC to PLC communication, advanced data types, and using Add-On instructions.

## **10-628-158 Exploring PLC Platforms (1 cr.)**

Introduces various Programmable Logic Controller software platforms utilized in industrial applications.

## **10-628-159 Operator Interfaces (1 cr.)**

Introduces Human Machine Interface (HMI) development. Students create Displays, HMI tags, Basic Objects, Object Animations, Global Objects, Alarms, and Trending.

## **10-628-161 Robotics 1 (1 cr.)**

Introduces basic robotic programming techniques. Hands on experience will include safety, system setup, jogging, events, tools, coordinate systems, and robot movement types.

## **10-628-162 Robotics 2 (1 cr.)**

Introduces advanced programming techniques. Hands on experience will include robotic input and output routines, program flow, variables/math instructions, offsets instructions, and operator communication instructions.

## **10-628-163 Robotics Integration (1 cr.)**

Introduces robotic vision systems and PC based robotic programming software. Students will network robots with Programmable Logic Controllers as an introduction to an automated manufacturing cell.

## **10-628-171 Instrumentation & Process Control 1 (1 cr.)**

Introduces Open Loop and Closed Loop control. Students learn about On/Off control, effects of deadband, and common manufacturing processes, which include Batch Processes and Continuous Processes.

## **10-628-172 Instrumentation & Process Control 2 (1 cr.)**

Introduces Proportional Control using Proportional Band and Proportional Gain. Students apply calibration procedures to correct transmitter output signals, and interpret Piping and Instrumentation Diagrams.

**10-628-173 Instrumentation & Process Control 3 (1 cr.)**

Introduces Programmable Logic Controller (PLC) based Proportional Integral and Derivative (PID) Control. Students apply various tuning methods to control closed-loop processes, including flow, level and temperature.

**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.

**10-628-181 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.

**10-628-187 AutoCAD Fundamentals (1 cr.)**

Teaches students to draw, edit, dimension, and plot drawings with the AutoCAD software.

**10-628-188 Blueprint Reading & AutoCAD (1 cr.)**

Introduces students to reading both electrical schematics and mechanical prints, while utilizing the AutoCAD software.

**10-628-194 Cell Integration (4 cr.)**

Covers automated manufacturing cell design and creation. Applies programmable logic controllers, robotics, sensors, motion controls, drives, vision systems, and industrial safety hardware. Students create electrical schematics, wire, program, and troubleshoot an automated manufacturing cell.

**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.

# Course Descriptions

## **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.

## **10-660-170 Ladder Logic & Control Devices (1 cr.)**

Introduces hardwired components found in industrial applications used to control simple circuits. Students will learn about switches, relays, contactors, timers, and indicator lamps. Students will use their knowledge of these devices to wire various circuits. Students will use ladder logic diagrams to interconnect and label devices to make complete circuits.

## **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.

## **10-660-184 Computer Systems & Networks 1 (1 cr.)**

Focuses on computer terms, computer hardware, computer functions, security and operating systems. Basic networking concepts are also introduced.

## **10-660-185 Computer Systems & Networks 2 (1 cr.)**

Introduces unique industrial networking media types. Ethernet networks including switches, routers, protocols, security, remote access, and wireless technology in an industrial setting.

## **662 Electrical Engineering Technology**

### **10-662-105 Advanced Circuits (3 cr.)**

Emphasizes advanced circuit analysis concepts and techniques that are used by electronic engineering technologists. Advanced AC complex number-based circuit analysis techniques are applied to series-parallel circuits, superposition, complex power, nodal analysis, Thevenin's and Norton's theorems, ideal operational amplifier circuits, circuits containing equivalent circuit models of sensors and actuators, frequency response analysis, and balanced three-phase circuits. Laboratory, simulation, and documentation experiences reinforce the lecture material.

### **10-662-106 Advanced Electronics (3 cr.)**

Learn advanced topics associated with the analysis of electronic devices and circuits. Fundamental mathematical modeling and applications of solid-state devices and operational amplifiers include device characteristics of p-n junction diodes, bipolar junction transistors (BJT), and metal oxide semiconductor field effect transistors (MOSFET); analysis of diode circuits, linear power supplies, and transistor switching circuits; and an introduction to design in the context of single-stage MOSFET amplifiers and operational amplifiers in standard configurations. Laboratory, simulation, and documentation experiences reinforce the lecture material.

## **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 or document using a content management system or help authoring tool.

**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.

# Course Descriptions

## **10-801-141 Introduction to Mass Communications (3 cr.)**

Explores communication in media and media literacy by providing insight into the important issues that confront students as consumers and purveyors of mass media within the workforce and in society. The mass media revolution, including media technologies, the evolution of media content and platforms, including new media, the impact of media communications on business and society as a whole, media bias, and media law and ethics form the basis of the course.

## **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 effective listening techniques and verbal and nonverbal communication skills through oral presentation, group activity, and other projects. The study of self, conflict, and cultural contexts will be explored, as well as their impact on communication.

## **10-801-196E Oral/Interpersonal Comm - Auto (3 cr.)**

Focuses on developing effective listening techniques and verbal and nonverbal communication skills through oral presentation, group activity, and other projects. The study of self, conflict, and cultural contexts will be explored, as well as their impact on communication.

## **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. Open enrollment for all students. It is recommended, but not required, that the student have basic computer skills, HS GPA 2.75+ OR ACPL Read 54+/Sent 83+, Next Gen Read 250+/Sent 237+, ACT Read 18+/Engl 15+ OR Read Prep 10838105/Sent Prep 74851745 OR not pursuing a degree. 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. Open enrollment for all students. It is recommended, but not required, that the student have basic computer skills, HS GPA 2.75+ OR ACPL Read 54+/Sent 83+, Next Gen Read 250+/Sent 237+, ACT Read 18+/Engl 15+ OR Read Prep 10838105/Sent Prep 74851745 OR not pursuing a degree. Personal/professional development students who have not taken the ACCUPLACER test need to consult with their instructor during the first class..

## **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.

## **10-802-106 Spanish for True Beginners (1 cr.)**

Teaches the basics of meeting and greeting, pronunciation and fundamentals of Spanish sentence structure. Useful words and expressions will boost ability and confidence to communicate in Spanish. Culturally relevant topics will be covered. No previous Spanish language experience needed.

## **10-802-107 Spanish Immersion (3 cr.)**

Travel to another country on a two-week Spanish language and culture immersion program. Study Spanish and practice your language skills by interacting with local community members and participating in high impact cultural excursions, visits, and activities. Make the world your classroom and gain unique cultural insights, understanding, and experience!

## **10-802-118 French 1 (3 cr.)**

Establishes a foundation in the French language presenting everyday situations. It focuses on vocabulary building, basic grammar, word recognition and usage, conversation, and understanding of culture and tradition.

## **10-802-119 German 1 (3 cr.)**

Establishes a foundation in the German language presenting everyday situations. It focuses on vocabulary building, basic grammar, word recognition and usage, conversation, and understanding of culture and tradition.

## **10-802-120 Italian 1 (3 cr.)**

Establishes a foundation in the Italian language presenting everyday situations. It focuses on vocabulary building, basic grammar, word recognition and usage, conversation, and understanding of culture and tradition.

## **10-802-121 French 2 (3 cr.)**

Builds on a foundation in the French language presenting everyday situations and focuses on vocabulary expansion, basic grammar, word recognition and usage, conversation, and understanding of culture and tradition.

## **10-802-126 German 2 (3 cr.)**

Builds on a foundation in German 1, presenting the language of everyday situations and focuses on vocabulary expansion, basic grammar, word recognition and usage, conversation, and understanding of culture and tradition.

## **10-802-127 German 3 (3 cr.)**

Expands on fundamentals of German grammar and communication addressed in German 2 and further develops learners' reading, writing, listening and speaking skills. Enables students to learn how to effectively engage in work-related communication and introduces German for special purposes. German 2 or consent of instructor is required.

## **10-802-128 German Conversation (3 cr.)**

Further develops reading, writing, listening and speaking skills. Focusing on speaking, students gain knowledge and skills necessary to effectively engage in verbal communication on a variety of topics. Completion of German 3 or instructor consent required.

## **10-802-145 Italian 4 (3 cr.)**

Improve upon the four proficiency skills: reading, speaking, writing and understanding through direct engagement with Italian language and culture. Participants will be steadily exposed to new and more complex grammatical and communicative structures. In order to develop these skills, the primary language of instruction in this course is Italian.

## **10-802-180 Italian 2 (3 cr.)**

Builds on a foundation in Italian 1, presenting the language of everyday situations and focuses on vocabulary expansion, basic grammar, word recognition and usage, conversation, and understanding of culture and tradition.

## **10-802-181 Italian 3 (3 cr.)**

Expands on fundamentals of Italian grammar and communication addressed in Italian 2 and further develops learners' reading, writing, listening and speaking skills. Enables students to learn how to effectively engage in work-related communication and introduces Italian for special purposes. Italian 2 or consent of instructor is required.

## **10-802-183 Japanese 1 (3 cr.)**

Establishes a foundation in Japanese language, focusing on language of common, everyday situations. Expands on vocabulary, basic grammar, word recognition and usage, conversation, and understanding of culture and tradition.

## **10-802-184 Japanese 2 (3 cr.)**

Builds on a foundation in Japanese 1, presenting the language of everyday situations and focusing on vocabulary expansion, basic grammar, word recognition and usage, conversation, and understanding of culture and tradition.

# Course Descriptions

## **10-802-185 Japanese 3 (3 cr.)**

Expands on the fundamentals of level 2 grammar and communication and further develops learners' reading, writing, listening and speaking skills in conversational Japanese. Completion of this course will enable students to gain the knowledge and skills necessary to effectively engage in communication. Completion of Japanese 2 or consent of instructor is required.

## **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.

### **10-804-118 Intermediate Algebra with Applications (4 cr.)**

This course offers algebra content with applications and an introduction to functions and complex numbers. Content builds upon the arithmetic of real numbers by using variable equations to solve problems. Topics include graphing and finding algebraic solutions for linear equations and inequalities, quadratic, exponential, polynomial, radical, and rational equations.

### **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.

## **10-804-135 Quantitative Reasoning (3 cr.)**

Intended to develop analytic reasoning and the ability to solve quantitative problems. Topics to be covered may include: construction and interpretation of graphs; descriptive statistics; geometry and spatial visualizations; math of finance; functions and modeling; probability; and logic. Appropriate use of units and dimensions, estimates, mathematical notation, and available technology will be emphasized throughout the course.

## **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.

## **10-804-197 College Algebra and Trigonometry with Applications (5 cr.)**

This course covers skills needed for success in Calculus and many application areas at the baccalaureate level. Algebra topics include the real and complex number systems, polynomials, exponents, radicals, solving equations and inequalities, relations and functions, systems of equations and inequalities, graphing, and conic sections. Trigonometry topics include the unit circle, trigonometric functions, graphs, identities, equations, inverse functions, solutions of triangles, complex numbers, polar coordinates, and vectors.

## **10-804-198 Calculus 1 (4 cr.)**

Introduction to differential and integral calculus and plane analytic geometry; Limits, derivatives, and graphs of algebraic, trigonometric, exponential, and logarithmic functions; antiderivatives, the definite integral, and the fundamental theorem of calculus, with applications.

## **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**

### **10-806-112 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.

# Course Descriptions

## **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.

## **10-806-114DE 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.

## **10-806-134 General Chemistry (4 cr.)**

Covers the fundamentals of chemistry. Topics include scientific method, problem-solving using quantitative, characteristics of matter, periodic relationships of elements, chemical bonding, chemical reactions, chemical equilibrium, analysis of chemical substances, characteristics of aqueous solutions, acids, bases, and gas laws.

## **10-806-134DE General Chemistry (4 cr.)**

Covers the fundamentals of chemistry. Topics include scientific method, problem-solving using quantitative, characteristics of matter, periodic relationships of elements, chemical bonding, chemical reactions, chemical equilibrium, analysis of chemical substances, characteristics of aqueous solutions, acids, bases, and gas laws.

## **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.

## **10-806-177 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.)

## **10-806-177DE 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.

**10-806-179DE 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.

**10-806-198DE 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 about critical and creative thinking that is in high demand in all occupations. Models, theories, and processes provide the foundation for learning logical thinking strategies. Students will apply a systematic approach to problem solving by analyzing the problem, assessing possible solutions, and making effective decisions. In addition, students will generate ideas and analyze complex issues. This course assists students with developing a critical thinking mindset which is essential at every level of personal and professional life.

**10-809-128 Marriage & Family (3 cr.)**

This course introduces the student to the sociological aspects of marriage and family life in a contemporary American society. Emphasis is on the study of cognitive, emotional, and behavioral patterns associated with courtship, love, mate selection, sexuality, and marriage. Diversity in family structure is also introduced.

**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.

# Course Descriptions

## **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.)**

This course is designed to give an overview of microeconomics, macroeconomics, and international economics. Concepts include scarcity, resources, alternative economic systems, growth, supply and demand, monetary and fiscal policy, inflation, unemployment and global economic issues.

## **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 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.

## **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.

## **863 Intensive English Program**

### **10-863-105 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 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-106 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 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-108 English Grammar Foundations (3 cr.)**

Introduce foundation-level grammar concepts for the Beginner-Level ELL students. Students will learn to analyze and use grammatical structures of English. New students, prior to registration contact 920-735-2443 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-109 English Grammar Development (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 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-112 English Grammar Academic (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 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-114 English Listening & Speaking Foundations (3 cr.)**

Provides comprehensive language training sequence focusing on developing communication, writing skills, and cultural awareness necessary for English language learners to prepare for college level technical programs. Listening and speaking skills as well as study skills will be emphasized. New students, prior to registration contact 920-735-2443 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-116 English Listening & Speaking Development (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 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-118 English Listening & Speaking Academic (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 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-119 American English Pronunciation (3 cr.)**

Develop English pronunciation to make communication more comprehensible. Focus on vowel clarification, consonant reproduction, intonation, stress, blends, and reductions. In addition, students have the opportunity to acquire new vocabulary, practice presentation skills, and present monologues and dialogue. New students, prior to registration contact 920-735-2443 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-124 English Reading Foundations (3 cr.)**

Provides comprehensive language training focusing on developing communication, writing skills, and cultural awareness necessary for English language learners to prepare for college level technical programs. Reading and vocabulary skills as well as study skills will be emphasized. New students, prior to registration contact 920-735-2443 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-126 English Reading Development (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 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

# Course Descriptions

## **10-863-127 English Reading Academic (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 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-129 English Writing Foundations (3 cr.)**

Provides comprehensive language training focusing on developing writing skills, communication and cultural awareness necessary for English language learners to prepare for college level technical programs. Beginning writing and grammar as well as study skills will be emphasized. New students, prior to registration contact 920-735-2443 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-136 English Writing Development (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 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-137 English Writing Academic (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 or [learnenglish@fvtc.edu](mailto:learnenglish@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-180 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 920.735.4844 or [rosario@fvtc.edu](mailto:rosario@fvtc.edu) for an assessment to determine your proficiency in English.

## **10-863-181 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 920-735-4844 or [rosario@fvtc.edu](mailto:rosario@fvtc.edu) for an assessment to determine your proficiency in English. Coreq: English Learning Theories 10861180

## **10-863-182 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 920-735-4844 or [rosario@fvtc.edu](mailto:rosario@fvtc.edu) for an assessment to determine your proficiency in English. Coreq: English Learning Methods



## **890 College & Personal Success**

### **10-890-100 College Success: On Course (1 cr.)**

On Course helps you learn a number of proven strategies for creating greater academic, professional and personal success. You will discover how to create a rich, fulfilling life by developing new beliefs and behaviors. College Success: On Course empowers you to make wise choices in your academic and personal life which leads to improved experiences and outcomes.

### **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.