

## Course Descriptions

### 001 - Horticulture

<b>10001108 Plant Propagation (2 cr.)</b>	Addresses production and propagation techniques for growing plants. Students will explore using a variety of equipment and methods.
<b>10001109 Landscape Construction 2 (2 cr.)</b>	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.
<b>10001111 Introduction to Horticulture (3 cr.)</b>	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.
<b>10001112 Horticulture Soils (3 cr.)</b>	Explores the properties of soils and applies them to horticultural uses as a growing medium and as an engineering base for landscaping.
<b>10001113 Greenhouse and Turf Pest Management (3 cr.)</b>	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.
<b>10001114 Introduction to Arboriculture (1 cr.)</b>	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.
<b>10001115 Tissue Culture Propagation (2 cr.)</b>	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.
<b>10001116 Irrigation Systems (1 cr.)</b>	Develops a basic understanding of an irrigation system. The focus is on irrigation installation, troubleshooting, maintenance, repairs and system design.
<b>10001117 Equipment Operation, Horticulture (2 cr.)</b>	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.
<b>10001119 Greenhouse Transition to Summer (1 cr.)</b>	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.

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<b>10001121 Hydroponic Growing &amp; Systems (2 cr.)</b>	Explores various hydroponic systems, their specific plant material, and growing conditions. Students will work hands-on with several units and plant materials.
<b>10001122 Interiorscaping (2 cr.)</b>	Studies the identification, characteristics, and physical requirements of interior plants.
<b>10001123 Landscape Management (3 cr.)</b>	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.
<b>10001125 Greenhouse Management &amp; Control Systems (2 cr.)</b>	Examines the day-to-day operation of a greenhouse to include operating systems, spatial management and planning crop timing.
<b>10001130 Turf Management &amp; Irrigation Systems (2 cr.)</b>	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.
<b>10001131 Organic Land Care (2 cr.)</b>	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.
<b>10001140 Plant Diagnostics (2 cr.)</b>	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.
<b>10001141 Horticulture Work Experience 1 (1 cr.)</b>	Deals with independent horticulture/landscape work experience, which is planned with each student and FVTC staff. Department consent is required.
<b>10001145 Landscape Estimating and Technical Reports (3 cr.)</b>	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.
<b>10001158 Woody Ornamental Plant ID (3 cr.)</b>	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.
<b>10001159 Survey of Herbaceous Plants (3 cr.)</b>	Studies commonly used annual, bulb and perennial herbaceous plants, with an emphasis on their use in the landscape, culture and care.

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- 10001170 Fall Landscape Maintenance (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.
- 10001171 Spring Landscape Maintenance (2 cr.)** Studies late winter and spring maintenance of landscape plantings including trees, shrubs, perennials and bulbs. Discussions and activities include pruning, fertilizing, planting, transplanting, winter damage assessment, spring cleanup, and pest control.
- 10001174 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.
- 10001181 Landscape Construction 1 (3 cr.)** Covers site conditions, landscape tools, and design plan implementation.
- 10001184 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 - Agri-Business**
- 10006102 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.
- 10006103 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.
- 10006104 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.
- 10006109 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.
- 10006113 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.

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<b>10006114 Dairy/Livestock Ration Balance (3 cr.)</b>	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.
<b>10006115 Agriculture Internship (2 cr.)</b>	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.
<b>10006116 Agribusiness Work Experience (3 cr.)</b>	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.
<b>10006117 Agriculture Career Preparation (1 cr.)</b>	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.
<b>10006119 Agricultural Crop Production (3 cr.)</b>	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.
<b>10006133 Introduction to Agribusiness (3 cr.)</b>	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.
<b>10006134 Agribusiness Sales (3 cr.)</b>	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.
<b>10006140 Animal Science Fundamentals (3 cr.)</b>	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.
<b>10006141 Crop Science (3 cr.)</b>	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.

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<b>10006143 Introduction to Soils (3 cr.)</b>	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.
<b>10006145 Dairy/Livestock Herd Management (3 cr.)</b>	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.
<b>10006146 Commercial Vegetable Production (3 cr.)</b>	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.
<b>10006148 Dairy Genetics and Reproduction (3 cr.)</b>	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.
<b>10006149 Dairy/Livestock Records Management (3 cr.)</b>	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.
<b>10006150 Agronomy Equipment (3 cr.)</b>	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.
<b>10006151 Agribusiness Management (3 cr.)</b>	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.
<b>10006154 Precision Ag Overview (3 cr.)</b>	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.

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### **10006155 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.

### **10006159 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.

### **10006162 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.

### **10006163 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.

### **10006169 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.

### **10006170 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.

### **10006171 Beef Production and Management (3 cr.)**

Focuses on beef production systems. Students will evaluate the foundational principles of modern beef production including beef cattle breeds, breeding beef cattle, nutrition, herd health and commercial herd and feedlot management. Connection between different production systems and markets will help users gain basic knowledge of production economics.

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<b>10006172 Livestock Essentials (2 cr.)</b>	Explores the agriculture industry and how it influences meat products. Topics discussed will include the multitude of variables that affect meat quality including the production methods used to raise the animal, how the animal is marketed and sold, and how the carcass is evaluated and handled.
<b>10006195 Equine Health and Management (3 cr.)</b>	Focuses on health and management of equines. Students will evaluate the foundation principles of equine health and management including: equine breeds, anatomy and physiology, genetics, reproduction and breeding, feeding and nutrition, health and husbandry, parasite control, hoof care, and housing.
<b>007 - Biotechnology</b>	
<b>10007174 Applied Microbiology (4 cr.)</b>	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.
<b>057 - Conservation</b>	
<b>10057106 Surveying 1 (3 cr.)</b>	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.
<b>10057107 Surveying 2 (3 cr.)</b>	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.
<b>10057109 Ecology (2 cr.)</b>	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.
<b>10057128 Wildlife Mgmt - Nongame and Hunted Species (3 cr.)</b>	Introduces wildlife ecology and management. The course focuses on habitat restoration and maintenance, deer management, wildlife damage control, ecological concepts and population dynamics.
<b>10057129 Fish Mgmt- Ichthyology, Limnology/Field Pract (3 cr.)</b>	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.
<b>10057130 Recreation Facilities Maintenance (3 cr.)</b>	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.

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<b>10057131 Forest Recreation Environmental Education (3 cr.)</b>	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.
<b>10057132 Forestry 1 (3 cr.)</b>	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.
<b>10057133 Forestry 2 (3 cr.)</b>	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.
<b>10057134 Soil and Water Conservation (3 cr.)</b>	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.
<b>10057135 Soil and Water Conservation/Engineering (3 cr.)</b>	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.
<b>10057136 Environmental Water Quality (3 cr.)</b>	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.
<b>10057137 Wastewater Management (3 cr.)</b>	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.
<b>10057140 Plant Identification (1 cr.)</b>	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.

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<b>10057142 Natural Resources Co-op Experience (2 cr.)</b>	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.
<b>10057143 Natural Resources Common Topics (2 cr.)</b>	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.
<b>10057183 Exploring Natural Resources (3 cr.)</b>	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.
<b>058 - Wildland Fire Training</b>	
<b>10058159 Advanced Fitness Qualification (1 cr.)</b>	Builds upon and maintains the physical fitness standards introduced in Fitness Qualification Prep 1. Prepares students to maintain physical fitness during fire season as well as in the off-season. Develop workout regimes to prepare students in the off-season in preparation for the first day of active fireline duty and beyond. The course prepares students to complete the firefighter fitness test as well as the work capacity test at the arduous level, 3 miles with a 45-pound pack in under 45 minutes.
<b>10058160 Wildfire Intro S130/S190/L180 (2 cr.)</b>	Prepares new firefighters in basic firefighting skills and behavior factors that will aid them in the safe and effective control of wildland fires.
<b>10058162 S212 Wildland Fire Chainsaws (1 cr.)</b>	Provides introduction to the function, maintenance and use of internal combustion engine-powered chainsaws and their tactical wildland fire application.
<b>10058163 S290 Intermediate Wildland Fire Behavior (1 cr.)</b>	Designed to prepare the prospective supervisor to undertake safe and effective fire management operations.
<b>10058164 S-219 Firing Operations (1 cr.)</b>	Planning, execution, safety, coordination and evaluation of an ignition operation on a wildland or prescribed fire.
<b>10058166 S390 Fire Behavior (2 cr.)</b>	Provides an introduction to Wildland Fire Behavior Calculations, which develops knowledge and skills required for effective fire behavior prediction.
<b>10058171 History of Wildfire (3 cr.)</b>	Examines the role of wildland fire and firefighting throughout history to the present.
<b>10058173 Fitness Qualification Prep 1 (1 cr.)</b>	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.

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<b>10058179 Fire Experience (3 cr.)</b>	Allows students to gain valuable fire experience for the resume. While not guaranteed, students may be paid for some forest fire suppression duty.
<b>10058181 Prescribed Fire (1 cr.)</b>	Consists of student participation in prescribed fire application for management and fuel reduction objectives. Emphasis will be on safety, ignition patterns and holding crews.
<b>10058182 Fire Prep (1 cr.)</b>	Prepares the student for fire season. Topics include writing burn plans, burn site checks, equipment inventory, organization and maintenance.
<b>10058184 S270 Basic Air Ops (1 cr.)</b>	Covers aircraft types and capabilities, aviation management and safety for flying in and working with agency aircraft, tactical and logistical uses of aircraft, and requirements for helicopter take-off and landing areas.
<b>10058185 S134 &amp; RT130 Annual Refresher (1 cr.)</b>	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.
<b>10058186 S211/S131 Pumps/FF1 (2 cr.)</b>	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.
<b>10058188 Wildfire Equipment Operation (2 cr.)</b>	Operation of heavy equipment of hand tools used in wildland fire.
<b>070 - Agriculture Mechanics</b>	
<b>10070101 Basic Agriculture Hydraulic Systems (3 cr.)</b>	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 equipment. Includes operation of fluid flow on various systems, maintenance, and system diagnostics. Students will work with hydraulic trainers, fixed displacement pump, motors, hydraulic cylinders, and basic control valves.
<b>10070102 Ag Equipment Dealership Principles (3 cr.)</b>	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.
<b>10070103 Intro to Service Maintenance &amp; Principles (3 cr.)</b>	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.

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<b>10070104 Safety Principles/Shop Tools (2 cr.)</b>	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.
<b>10070105 Farm Safety &amp; Equipment Operation (1 cr.)</b>	Shows the student how to operate a tractor over 20 PTO horsepower, including how to connect and disconnect equipment or equipment parts. Topics include specialized machinery for livestock, toxic environments, agricultural chemicals, blasting, fertilizer and the youth certificate program.
<b>10070106 Basic Harvesting (3 cr.)</b>	Introduces the student to the basic theory of forage and grain harvesting equipment. Includes operation, adjustments, and troubleshooting based on scenarios. Students will perform basic maintenance and adjustments on the equipment and attachments.
<b>10070110 Agriculture Hydraulic Systems (2 cr.)</b>	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.
<b>10070114 Basic Agriculture Transmissions (2 cr.)</b>	Introduces the student to the fundamentals of basic mechanical transmission components and theory. The topics that students will be introduced to will be mechanical clutches, braking systems, final drives, and mechanical transmissions. Students will perform basic repair and adjustments on these components.
<b>10070115 Agriculture Air Conditioning (1 cr.)</b>	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.
<b>10070116 Agriculture Hydraulic Systems Advanced (4 cr.)</b>	Introduction to theory on variable displacement pumps (which includes hydrostatic transmissions), hydraulic motors used for ground drive and steering, and remote control valves used on agricultural equipment. Students will perform disassembly and assembly of the components and perform basic adjustments. Students will be introduced into testing procedures using appropriate tools to diagnose issues based on scenarios.

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- 10070117 Basic Diesel Engines (2 cr.)** Introduces the student to the theory, operation, and basic systems of a diesel engine. Student will be introduced to valve trains, rotating group, lubrication system, cooling system, and intake and exhaust systems. Student will perform diagnostic and repair of internal parts of the diesel engine. Student will perform measurements using specialty tools and manufacturer's service-related information to complete hands-on activities.
- 10070118 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.
- 10070119 Basic Diesel Engines Fuel Systems (2 cr.)** Students will be introduced to various types of mechanical fuel delivery systems used on agricultural engines. Students will be introduced to the theory and operation of mechanical fuel pumps, transfer pumps, injectors, turbo chargers and air-to-air coolers. Students will diagnose and repair the various components of the fuel systems. Proper timing of the engine fuel system, using specialty tools and service materials, will be practiced during hands-on lab activities.
- 10070120 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.
- 10070121 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.
- 10070122 Advanced Harvesting (4 cr.)** Introduces students to the theory of operation, adjustments, and repair on baler knotters, plungers, and throwers. Students will also be introduced to forage harvesting theory, operation, adjustments, and repair on forage harvesting kernel processors and attachments. Self-propelled forage harvester theory and operations will be reviewed. Students will be exposed to additional topics on grain harvesting equipment which includes theory, operations, adjustments, and repair on grain harvesting equipment, attachments, and hydrostatic drive. Students will perform hands-on lab work on listed equipment using proper testing and repair tools from the manufacturers.

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<b>10070123 Agriculture Power Transmission (4 cr.)</b>	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.
<b>10070124 Advanced Fuel Systems and Emissions (2 cr.)</b>	Introduces students to theory and operation of electronically controlled fuel systems. Students will explore and examine electronically controlled fuel systems and injectors. Students will be introduced to emission systems used on today's modern equipment. These topics will include diesel particulate filters (DPF), exhaust gas recirculation (EGR), selective catalytic reduction (SCR), and diesel oxidation catalyst systems. Students will perform hands-on lab activities using specialty tools and service related materials.
<b>10070126 Skid Loader/Compact Equipment (3 cr.)</b>	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.
<b>10070130 Agriculture Forage Harvesting Equipment (3 cr.)</b>	Focuses on forage harvesting equipment. Students will perform necessary adjustments and repairs associated with the forage harvesting equipment
<b>10070131 Ag DC Electrical Systems (3 cr.)</b>	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.
<b>10070132 Advanced Agriculture Hydraulic Systems (3 cr.)</b>	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.
<b>10070134 Shop Tool/Safety Principles (3 cr.)</b>	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.
<b>10070136 AG DC Electronic Systems (3 cr.)</b>	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.

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<b>10070137 Precision Equipment Systems (3 cr.)</b>	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.
<b>10070138 Advanced Agriculture Transmission (3 cr.)</b>	Introduces students to power take-off (PTO) systems, differentials, partial powershift transmissions, powershift transmissions, and variable speed transmissions. Students will learn the theory of operations, repair, adjustments, and proper testing along with calibrations, using specialty tools. In a lab setting, students will complete repairs on equipment based on descriptions of customer complaints and will diagnose and repair the systems.
<b>10070139 Agriculture Student Development (1 cr.)</b>	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.
<b>080 - Production Agriculture</b>	
<b>10080104 Farm Business Management (2 cr.)</b>	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.
<b>10080105 Feeding Modern Livestock Operations (2 cr.)</b>	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.
<b>10080106 Precision Agriculture (2 cr.)</b>	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.
<b>10080107 Tractor Preventive Maintenance (2 cr.)</b>	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.
<b>10080108 Crop Management Principles (2 cr.)</b>	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.

## Course Descriptions

- 10080109 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.
- 10080110 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.
- 10080111 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.
- 10080112 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.
- 10080113 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.
- 10080114 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.
- 10080115 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 Management**

- 30090350 Livestock/Farmstead Equipment Management-Part 1 (1 cr.)** Includes various phases of selection, breeding, herd health, and the raising and marketing of livestock, and livestock products. Students will learn the selection of milking, feed, ventilation, manure handling, equipment, and farm buildings. Using a business analysis, they will understand how the livestock and farmstead program is related to the total farm enterprise. Classes are held during the semester and include classroom and on-farm instruction.

## Course Descriptions

<b>30090351 Livestock/Farmstead Equipment Management-Part 2 (1 cr.)</b>	Includes various phases of selection, breeding, herd health, and the raising and marketing of livestock, and livestock products. Students will learn the operation of milking, feed, ventilation, manure handling, equipment, and farm buildings. Using a business analysis, they will understand how the livestock and farmstead program is related to the total farm enterprise. Classes are held during the semester and include classroom and on-farm instruction.
<b>30090352 Livestock/Farmstead Equipment Management-Part 3 (1 cr.)</b>	Includes various phases of selection, breeding, herd health, and the raising and marketing of livestock, and livestock products. Students will learn the maintenance of milking, feed, ventilation, manure handling, equipment, and farm buildings. Using a business analysis, they will understand how the livestock and farmstead program is related to the total farm enterprise. Classes are held during the semester and include classroom and on-farm instruction.
<b>30090353 Soil Management-Part 1 (1 cr.)</b>	Students will conduct soil testing procedures. Information will be utilized for an analysis of the farm business and planning of cropping strategies. Classes are held during the semester and include classroom and on-farm instruction.
<b>30090354 Soil Management-Part 2 (1 cr.)</b>	Students will conduct soil testing procedures and interpret reports. Information will be utilized for an analysis of the farm business and planning of cropping strategies. Classes are held during the semester and include classroom and on-farm instruction.
<b>30090355 Soil Management-Part 3 (1 cr.)</b>	Students will conduct soil testing procedures, interpret reports, and implement a land use plan. Information will be utilized for an analysis of the farm business and planning of cropping strategies. Classes are held during the semester and include classroom and on-farm instruction.
<b>30090356 Livestock Nutrition-Part 1 (1 cr.)</b>	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, and metabolic diseases of lactating livestock. Students will be introduced to base feed and feeding programs. Classes are held during the semester and include classroom and on-farm instruction.

## Course Descriptions

- 30090357 Livestock Nutrition-Part 2 (1 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, and metabolic diseases of lactating livestock. Students will apply base feed and feeding programs. Classes are held during the semester and include classroom and on-farm instruction.
- 30090358 Livestock Nutrition-Part 3 (1 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, and metabolic diseases of lactating livestock. Students will evaluate base feed and feeding programs. Classes are held during the semester and include classroom and on-farm instruction.
- 30090359 Crop Management-Part 1 (1 cr.)** The farm cropping program is an integral part of the total farm business management plan. Students will be introduced to farm crop production, management, and economic practices. Specific topics will relate to variety, selection, planning, pest control, harvesting, storage, safety, and marketing. Classes are held during the semester and include classroom and on-farm instruction.
- 30090360 Crop Management-Part 2 (1 cr.)** The farm cropping program is an integral part of the total farm business management plan. Students will interpret crop production, management, and economic practices. Specific topics will relate to variety, selection, planning, pest control, harvesting, storage, safety, and marketing. Classes are held during the semester and include classroom and on-farm instruction.
- 30090361 Crop Management-Part 3 (1 cr.)** The farm cropping program is an integral part of the total farm business management plan. Students will evaluate crop production, management, and economic practices. Specific topics will relate to variety, selection, planning, pest control, harvesting, storage, safety, and marketing. Classes are held during the semester and include classroom and on-farm instruction.

## Course Descriptions

<b>30090381 Farm Business, Operating a (3 cr.)</b>	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.
<b>30090382 Soil Management (3 cr.)</b>	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.
<b>30090383 Crop Management (3 cr.)</b>	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.
<b>30090384 Livestock Nutrition (3 cr.)</b>	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.
<b>30090385 Livestock/Farmstead Equipment Management (3 cr.)</b>	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.
<b>30090386 Farm Records and Business Analysis (3 cr.)</b>	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.

## Course Descriptions

<b>30090388 Precision Agriculture (3 cr.)</b>	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.
<b>30090390 Transferring the Farm (3 cr.)</b>	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.
<b>30090391 Ag Commodities and Marketing (3 cr.)</b>	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.
<b>30090392 Farm Records and Business Analysis-Part 1 (1 cr.)</b>	Covers the practical use of a farm record system in managing the farm and financial analysis. Topics include the establishment of farm business goals, 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 student's needs. Production and financial decisions will be based on students' farm business analysis. Classes are held during the semester and include classroom and on-farm instruction.
<b>30090393 Farm Records and Business Analysis-Part 2 (1 cr.)</b>	Covers the practical use of a farm record system in managing the farm and financial analysis. Topics include the selection of farm business goals, 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 student's needs. Production and financial decisions will be based on students' farm business analysis. Classes are held during the semester and include classroom and on-farm instruction.
<b>30090394 Farm Records and Business Analysis-Part 3 (1 cr.)</b>	Covers the practical use of a farm record system in managing the farm and financial analysis. Topics include the analysis of farm business goals, 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 student's needs. Production and financial decisions will be based on students' farm business analysis. Classes are held during the semester and include classroom and on-farm instruction.

## Course Descriptions

### **30090395 Operating a Farm Business- Part 1 (1 cr.)**

Focuses on management skills and concepts that 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 farm business records to make sound farm management decisions. Entire farming operation is assessed and plans are developed for future needs and goals. Classes are held during the semester and include classroom and on-farm instruction.

### **30090396 Operating a Farm Business- Part 2 (1 cr.)**

Focuses on management skills and concepts that 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 to make sound farm management decisions. Entire farming operation is assessed and plans are developed for future needs and goals. Classes are held during the semester and include classroom and on-farm instruction.

### **30090397 Operating a Farm Business- Part 3 (1 cr.)**

Focuses on management skills and concepts that 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, maintain, and analyze farm business records to make sound farm management decisions. Entire farming operation is assessed and plans are developed for future needs and goals. Classes are held during the semester and include classroom and on-farm instruction.

## **091 - Animal Husbandry**

### **10091108 Animal Disease (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.

### **10091110 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.

### **10091114 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.

## Course Descriptions

- 10091119 Large Animal Nursing (3 cr.)** Focuses on the handling, disease processes, and medical nursing of large animal patients, while also developing skills in large animal anesthetic techniques, surgical preparation and monitoring.
- 10091120 Veterinary Clinical Pathology 1 (3 cr.)** Introduces laboratory equipment, elementary laboratory procedures and the principles of microscopy, parasitology, urine analysis, hematology and bacteriology.
- 10091122 Advanced Topics in Veterinary Medicine (1 cr.)** Addresses current topics and advanced diagnostic procedures in veterinary medicine.
- 10091123 Lab Animal and Exotics (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.
- 10091124 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.
- 10091127 Veterinary Surgical Nursing 1 (3 cr.)** Covers surgical instruments, package prep, patient prep, anesthesia, monitoring and post-op care.
- 10091128 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.
- 10091131 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.
- 10091132 Veterinary Office Procedures 2 (1 cr.)** Covers office documents, patient records, billing, estimates, etc., using veterinary office software.
- 10091140 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.
- 10091152 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.
- 10091153 Veterinary Diagnostic Imaging 1 (2 cr.)** Explores concepts in veterinary radiology, with emphasis on both large and small animals

## Course Descriptions

<b>10091170 Veterinary Medical Terminology (2 cr.)</b>	Teaches acceptable veterinary medical terminology for common clinically recognizable diseases, operations, systems and procedures, as well as common medical signs, abbreviations and colloquial vocabulary.
<b>10091171 Animal Care and Management 1 (3 cr.)</b>	Focuses on handling and husbandry of the animals most commonly seen in veterinary medicine. Includes animal behavior, nutrition, and healthcare.
<b>10091173 Animal Care And Management 2 (2 cr.)</b>	Focuses on handling, medical nursing and disease processes of animals most commonly seen in veterinary medicine
<b>10091180 Veterinary Technician Clinical Skills (1 cr.)</b>	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
<b>10091181 Veterinary Diagnostic Imaging 2 (2 cr.)</b>	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.
<b>10091191 Pharmacology 1-Animals (2 cr.)</b>	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.
<b>30091101 Teaching Dog Training (3 cr.)</b>	Introduces students to the skills needed to teach dog training classes to the public. Participants will practice teaching single event topics as well as multi-week training plans. Interpretation of the rules for Trick titles, Canine Good Citizen, Rally and Dog Parkour will be needed to allow delivery of classes to handlers and dogs. Participants will assess handler/dog performance in a simulated test environment.
<b>30091103 Animal Health &amp; Wellness (1 cr.)</b>	Introduces the major dog breeds, body composition, and various systems using the proper terms. Identify parts of systems and explain their purpose and interaction. Identify warning signals and use critical thinking and problem solving to recommend corrective action. Kenneling and kennel upkeep/sanitation will follow industry standards and be reviewed.
<b>30091104 Grooming Basics (1 cr.)</b>	Participants learn the terms associated with dog grooming. Identify and demonstrate proper use of tools and sanitation requirements. Assess all aspects of the dog's well-being before, during, and after grooming and use critical thinking and problem solving to offer suggestions. Proper industry record keeping will also be explored and followed.

## 101 - Accounting

## Course Descriptions

<b>10101101 Applied Accounting Capstone (3 cr.)</b>	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 year end financial statements, analysis and projections.
<b>10101104 QuickBooks Accounting Online (2 cr.)</b>	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.
<b>10101105 Data Analytics for Accounting (2 cr.)</b>	Project-based coursework using real-world business scenarios to synthesize and present data in Excel, Tableau, and Power BI. The course will use the AMPS (Ask the question, Master the data, Perform Analysis, Share the story) model to develop and reinforce critical thinking skills in accounting and finance roles.
<b>10101107 Accounting, Principles of (3 cr.)</b>	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.
<b>10101132 Cost and Managerial Accounting (4 cr.)</b>	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.
<b>10101145 Spreadsheets, Beginning (1 cr.)</b>	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.
<b>10101152 Spreadsheets, Intermediate (1 cr.)</b>	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.
<b>10101153 Spreadsheets, Advanced (2 cr.)</b>	Focuses on spreadsheet topics and functions that enhance student expertise.
<b>10101155 VITA Tax Assistance (1 cr.)</b>	Provides hands-on experience in preparing state and federal income tax returns for people in the community. Is particularly valuable for students entering the public accounting field.

## Course Descriptions

<b>10101158 Accounting Internship (2 cr.)</b>	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
<b>10101180 Financial Accounting 1 (4 cr.)</b>	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.
<b>10101181 Financial Accounting 2 (4 cr.)</b>	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.
<b>10101182 Intermediate Accounting (4 cr.)</b>	Reviews accounting and recording processes, temporary investments, cash flows, revenue recognition and financial statement analysis.
<b>10101186 Income Tax Accounting (4 cr.)</b>	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.
<b>10101187 Business and Personal Tax (3 cr.)</b>	Covers corporate tax, sales and use tax, personal property tax, and other taxes not covered in Income Tax Accounting.
<b>10101190 Financial Fraud Detection, Fundamentals of (1 cr.)</b>	Focuses on accounting information systems and accounting processes related to sales, purchasing, etc. Covers internal controls designed to mitigate and prevent financial fraud.
<b>10101193 Great Plains-Enterprise Resource Planning System (1 cr.)</b>	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.
<b>10101194 Payroll (2 cr.)</b>	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.
<b>10101195 Accounting for Payroll (1 cr.)</b>	Presents preparation of payroll-related journal entries. A computer practice set is included. Proficiency with electronic calculators is recommended.
<b>102 - Business Management</b>	
<b>10102102 Business Management Capstone (2 cr.)</b>	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.

## Course Descriptions

<b>10102103 Business Law 1 (3 cr.)</b>	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.
<b>10102106 Business Management Internship (2 cr.)</b>	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.
<b>10102112 Business, Introduction to (3 cr.)</b>	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.
<b>10102115 Business Analyst Essentials (2 cr.)</b>	Provides a foundational understanding of business analysis and the underlying competencies of a business analyst.
<b>10102124 BA Planning and Monitoring (3 cr.)</b>	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.
<b>10102126 Elicitation and Collaboration Techniques (2 cr.)</b>	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.
<b>10102130 Requirements Analysis &amp; Design (3 cr.)</b>	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.
<b>10102136 BA Strategy Analysis &amp; Evaluation (3 cr.)</b>	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.
<b>10102138 Biz Squad Internship (3 cr.)</b>	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.
<b>10102157 Business Law 2 (3 cr.)</b>	Discusses employment, business organizations, ethics, social media and internet law, and insurance.

## Course Descriptions

### **10102198 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 - Computer Software**

### **10103103 Excel Mastery (1 cr.)**

Enhance your Excel skills and prepare for career success. Through hands-on exercises and real-world scenarios, you'll master Excel by applying your knowledge to practical projects. Upon completion of this course, students are eligible to complete the Microsoft Office Specialist Associate and Expert.

### **10103104 Word Mastery (1 cr.)**

Enhance your Word skills and prepare for career success. Through hands-on exercises and real-world scenarios, you'll master Word by applying your knowledge to practical projects. Upon completion of this course, students are eligible to complete the Microsoft Office Specialist Associate and Expert.

### **10103107 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.

### **10103108 Excel for Business (2 cr.)**

Learn Microsoft Excel starting with fundamental concepts and moving to more advanced techniques by using formulas and functions for analysis, creating PivotTables, and presenting data clearly and accurately.

### **10103109 Design Applications (2 cr.)**

Introduces students to the fundamentals of the software used to create video, images and content for mobile, social and online advertising. In addition, students will learn how to publish video and images online.

### **10103120 Microsoft Office (2 cr.)**

Gain technical skills employers are seeking, through hands-on coursework, using the features in Outlook, Word, Excel, and PowerPoint.

### **10103180 MS Word Introduction (1 cr.)**

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

### **10103181 MS Excel Introduction (1 cr.)**

Presents basic features of Microsoft Excel. Learn how to create, format, and edit worksheets; create formulas and tables; manage large workbooks; and analyze data with charts.

### **10103183 MS PowerPoint Introduction (1 cr.)**

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

### **10103184 MS Word Intermediate (1 cr.)**

Presents intermediate features of Microsoft Word. 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.

## Course Descriptions

- 10103186 MS Excel Intermediate (1 cr.)** Presents intermediate features of MS Excel. Learn how to create and modify a PivotTable and PivotChart; manage large workbooks and use advanced sorting and filtering; and create charts, diagrams, and templates.
- 104 - Marketing & Merchandising Mgmt**
- 10104100 Digital Marketing (3 cr.)** Focuses on best practices for web site analysis, usability and site conversion. Students will learn how to apply basic UX (usability) concepts, site analysis data, search engine optimization (SEO), and email marketing to attract, grow and retain customers.
- 10104101 Marketing Analytics (3 cr.)** Focuses on how websites, social media and online campaign metrics can help businesses manage marketing programs. Students will be exposed to industry analytic tools, trends and concepts.
- 10104102 Marketing Strategy (3 cr.)** Students will experience hands-on marketing through a team-based agency model. Through research and analysis, they will develop marketing strategies, tactics, and content to meet the objectives of their real-world business clients. Project management skills, team collaboration and professional development will be emphasized.
- 10104103 Promotion Principles (3 cr.)** Introduces the concept of integrated marketing communications. Students will apply communication and creative theory to develop strategies, plans, campaigns, and tactics that support marketing goals. The course will explore major promotional mix tools including branding, advertising, sales promotion, public relations, and digital marketing.
- 10104104 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.
- 10104106 Business Communication (3 cr.)** Focuses on the set of skills necessary to communicate professionally in sales and marketing careers. Students gain practical experience using tools such as emails, letters, positive and negative message responses, reports and presentations. The course also emphasizes the importance of both verbal and nonverbal communication, business etiquette, and team collaboration in a digital, social, mobile, and diverse global marketplace.
- 10104107 Content Creation (3 cr.)** Learn how to create valuable marketing content that attracts, acquires, and engages target audiences. Students will gain hands-on experience planning and creating written and visual content for websites, blogs, posts, advertisements, videos, audio/podcasts, and email marketing campaigns. Content distribution concepts will be explored including strategies to maximize exposure through owned, earned, and paid media channels.

## Course Descriptions

<b>10104108 Social Media Marketing (3 cr.)</b>	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.
<b>10104109 Digital Media Buying (3 cr.)</b>	Provides essential digital media buying framework on how to create an effective strategy that maximizes return on investment. Students will learn how to plan, buy, budget, and optimize digital marketing campaigns.
<b>10104110 DECA Leadership (1 cr.)</b>	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.
<b>10104117 Sales Principles (3 cr.)</b>	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.
<b>10104118 Professional Sales (2 cr.)</b>	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.
<b>10104119 Sales Strategy (2 cr.)</b>	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.
<b>10104126 Marketing Internship (2 cr.)</b>	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.
<b>10104151 Principles of Marketing (3 cr.)</b>	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 - Office Systems/Technology

<b>10106101 Web Technologies (2 cr.)</b>	Focuses on social and business web applications and components. Students will develop skills to create engaging content for the web.
<b>10106102 Business Engagement Tools (3 cr.)</b>	Learn how to confidently navigate and utilize digital tools for effective engagement with customers and enhance team collaboration with an in-depth exploration of the essential tools and strategies.
<b>10106103 Intro to Office Careers (1 cr.)</b>	Focuses on career expectations, professional resources, and skills needed to prepare students for the Office Assistant and Administrative Professional programs.
<b>10106105 Office Operations (3 cr.)</b>	Discover the skills and knowledge necessary to effectively operate in an office environment. This introductory course focuses on enhancing organizational and operational efficiency.
<b>10106106 Office Operations Advanced (3 cr.)</b>	Continue to build on skills from the Office Operations course and dive deeper into modern tools, and more complex operational procedures while learning communication strategies, reporting, collaborating on tasks, leading on projects, and solving office problems.
<b>10106108 Office Operations Mastery (3 cr.)</b>	Continue to build on essential skills from the Office Operations Advanced course to effectively manage office operations, sharpen leadership skills, and use strategic insights to maintain a well-organized office environment.
<b>10106109 Virtual Communication (3 cr.)</b>	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.
<b>10106111 Event Management (3 cr.)</b>	Learn how to coordinate a successful meeting or event from the beginning to the end of the planning process while communicating with key stakeholders.
<b>10106112 Keyboarding Speed Development (1 cr.)</b>	Focuses on improving typing speed and accuracy through the use of skill-building software. Introduces data entry using the numeric keypad.
<b>10106113 Microsoft Outlook (2 cr.)</b>	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.
<b>10106114 Connecting Digitally (3 cr.)</b>	Explore the digital tools and strategies utilized to effectively manage communication within an organization to enhance operations.
<b>10106115 Administrative Procedures (3 cr.)</b>	Focuses on the development of fundamental office skills. Students will gain skill in general office duties, application of office technologies, and professional communication.

## Course Descriptions

<b>10106116 Professional Business Writing (2 cr.)</b>	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.
<b>10106117 Business Networking (2 cr.)</b>	Provides students with opportunity to develop and analyze networking and business relationships. Includes examination of the networking process, tools to facilitate and enhance networking opportunities, and networking communication development.
<b>10106118 Effective Business Practice (3 cr.)</b>	Focuses on business soft skills to provide students with the ability to conduct themselves in the business world with confidence.
<b>10106119 Critical Thinking (3 cr.)</b>	Continue to build on essential skills from the Office Operations Advanced course to effectively manage office operations, sharpen leadership skills, and use strategic insights to maintain a well-organized office environment.
<b>10106120 Advanced Microsoft Office (3 cr.)</b>	Builds on software knowledge obtained in the Microsoft Office course. Students will advance their software knowledge by learning advanced features to use in business such as advanced formatting, mail merge, complex formulas, lookup functions, use of tables, and working with large datasets.
<b>10106121 Office Management Experience (2 cr.)</b>	Demonstrate the program outcomes by providing cumulative project experience or completing an on-the-job supervised office work experience.
<b>10106123 Critical Thinking for Business (3 cr.)</b>	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.
<b>10106124 Business Projects (3 cr.)</b>	Focuses on business-related projects in a scenario-based environment simulating current office practices.
<b>10106125 Microsoft Office Suite, Advanced (3 cr.)</b>	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.
<b>10106126 Project Management Software (1 cr.)</b>	Learn how to effectively use project management software to organize a company's workflow by planning, organizing, and managing real-world projects.
<b>10106127 Microsoft Apps (2 cr.)</b>	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.
<b>10106128 Data Optimization (2 cr.)</b>	Learn how to interpret, prepare, and analyze data by exploring tools and techniques used to transform raw data into actionable insights, for roles in data-driven industries.

## Course Descriptions

<b>10106138 Office Career Experience (2 cr.)</b>	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.
<b>10106140 Meeting &amp; Event Management Fundamentals (3 cr.)</b>	Focuses on coordinating business meetings and planning successful business events. Students will develop the fundamentals skills of meeting and event logistics.
<b>10106157 Administrative Management (3 cr.)</b>	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.
<b>10106160 Business Relationship Development (2 cr.)</b>	Focuses on the networking process, tools to facilitate and enhance networking opportunities, and networking communication development.
<b>10106178 Business Presentation Techniques (3 cr.)</b>	Develops skills to prepare, support, and facilitate effective business presentations. Students develop skills to present themselves and design powerful in-person and virtual presentations.
<b>10106199 Business Career Planning (1 cr.)</b>	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.
<b>107 - Information Technology (IT)</b>	
<b>10107102 Exploring IT Foundations (2 cr.)</b>	Pursue this introductory course where students explore information technology-based tasks from a variety of IT roles. Students will be introduced to various technologies used on in industry.
<b>10107110 IT Career Experience (2 cr.)</b>	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.
<b>10107150 Microcomputer Applications (2 cr.)</b>	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.
<b>10107158 Systems Analysis (3 cr.)</b>	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.

## Course Descriptions

**10107184 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 and Restaurant Mngmt**

**10109102 Transportation, Registration and Housing (2 cr.)** Identify the meeting audience location and understand technological abilities to best assess the location for a meeting and the type of registration to be used. Learn to identify and make informed decisions that allow attendees a seamless meeting experience.

**10109103 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.

**10109104 Meeting & Event Management, Adv. Apps (3 cr.)** Learn to create, market, plan and implement incentive programs and special events. Apply creativity to develop events with unique purposes and presentations combining elements such as site selection, decor, lighting, sound and entertainment as well as food and beverage to reflect the theme of the event.

**10109105 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.

**10109106 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.

**10109107 Partnership Development (2 cr.)** Learn how to analyze a meeting to identify sponsorship and fundraising opportunities. These partnerships build support for a meeting, increase marketing effectiveness and increase meeting profitability.

**10109109 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.

## Course Descriptions

<b>10109110 Guest Service Experience (1 cr.)</b>	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.
<b>10109111 Room Operations (3 cr.)</b>	Introduces the functions of the housekeeping and front desk departments and their interdependency.
<b>10109112 Exposition Management (2 cr.)</b>	Provides the student with an understanding of the growing role of trade shows as a source of revenue for the sponsor as well as an opportunity for buyers and sellers to interact face-to-face in an educational environment. Students create a request for proposal, identify contractors necessary for producing the show, and learn how to effectively interact and communicate with exhibitors throughout the process.
<b>10109113 Hospitality - Internship 1 (2 cr.)</b>	Allows the student to investigate and learn through structured, hands-on experiences in the hospitality/tourism industry.
<b>10109114 Hospitality - Internship 2 (2 cr.)</b>	Provides the student an additional opportunity to investigate and learn through structured, hands-on experiences in the hospitality/tourism industry.
<b>10109116 Prof. Field Study - Hospitality &amp; Culinary (3 cr.)</b>	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.
<b>10109118 Hospitality Internship (2 cr.)</b>	Provides the student with the opportunity to investigate and learn through hands-on experiences in the hospitality industry. This internship is broad in scope to allow each learner to individualize work-related goals, developed with a mentor, and to put the goals into practice through daily industry experience.
<b>10109119 Hospitality Security (2 cr.)</b>	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.
<b>10109125 Hospitality Sales and Promotion (2 cr.)</b>	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.
<b>10109126 Customer Service Management (3 cr.)</b>	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.

## Course Descriptions

### **10109127 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.

### **10109131 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.

### **10109140 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.

### **10109152 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**

### **10110100 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.

### **10110102 Legal Fundamentals (3 cr.)**

A study of how civil and criminal law governs society. Emphasis will be on understanding the state and federal court systems, legal terminology and legal theory. Students will develop those skills necessary to recognize and understand common legal issues facing the legal system. Students will explore the state and federal court systems, civil and criminal court procedure as well as various legal theories.

### **10110106 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.

### **10110107 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.

### **10110110 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.

## Course Descriptions

<b>10110111 Insurance Law for Legal Professionals (3 cr.)</b>	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.
<b>10110112 Legal Terminology, Introduction to (3 cr.)</b>	Provides the student with the ability to spell, pronounce, and define legal terms used in a courtroom environment.
<b>10110114 Administration of Estates (3 cr.)</b>	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.
<b>10110115 Legal Research &amp; Writing, Introduction (3 cr.)</b>	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.
<b>10110117 Legal Research &amp; Writing, Advanced (3 cr.)</b>	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.
<b>10110118 Law Office Management and Technology (3 cr.)</b>	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.
<b>10110119 Legal Studies Internship (2 cr.)</b>	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.
<b>10110142 Paralegal Internship (3 cr.)</b>	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.
<b>10110151 Civil Litigation Procedures (3 cr.)</b>	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.
<b>10110160 Employment Law for Legal Professionals (3 cr.)</b>	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.
<b>10110168 Criminal Procedures for Legal Professionals (3 cr.)</b>	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 - Financial Planning**

#### **10114101 Introduction to Banking Careers (1 cr.)**

This course provides a comprehensive overview of the various types of banking jobs and the skills, knowledge, and attributes needed for success in the industry. Students will gain an understanding of the diverse career paths within banking, from customer-facing roles to back-office positions. The course will also explore the changing landscape of banking careers in response to technological advancements and evolving consumer needs.

#### **10114103 Financial Statement Analysis (3 cr.)**

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

#### **10114104 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.

#### **10114105 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.

#### **10114106 Financial Products and Services (3 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.

#### **10114108 Financial Management (3 cr.)**

Introduction to financial management of corporate and investment decision-making. Topics covered include financial analysis and planning, working capital management, the capital budgeting process, and long-term financing.

#### **10114115 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.

#### **10114124 Principles of Money and Banking (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.

#### **10114175 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.

## Course Descriptions

<b>10114176 Stock and Bond Investments (3 cr.)</b>	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.
<b>116 - Human Resources</b>	
<b>10116105 Employee and Labor Relations (3 cr.)</b>	Explores employee relations efforts in both unionized and non-union organizations.
<b>10116123 Human Resources Internship (2 cr.)</b>	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.
<b>10116150 Employment Law (3 cr.)</b>	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.
<b>10116152 Technology in Human Resources (2 cr.)</b>	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.
<b>10116153 Compensation and Benefits (3 cr.)</b>	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.
<b>10116154 Recruiting and Hiring (3 cr.)</b>	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.
<b>10116155 Business Ethics (3 cr.)</b>	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.
<b>10116160 Training Design and Measurement (3 cr.)</b>	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.
<b>10116168 Principles of Budgeting for HR (3 cr.)</b>	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.

## Course Descriptions

**10116193 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.

**10116199 Human Resources Career Experience (2 cr.)**

Students can select any hands on experience related to: Internship, Field Research, Service Learning, Capstone, or Industry Related Experience. Instructor approval required. Completion of a minimum of 34 program credits is highly recommended.

### **140 - Global Education and Services**

**10140100 International Professional Field Studies (3 cr.)**

Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in a another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.

**10140102 Intl Prof Field Study: Ag-Horticulture (3 cr.)**

Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.

**10140103 Intl Prof Field Study: Business (3 cr.)**

Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.

**10140104 Intl Prof Field Study: CJ-Forensic Science (3 cr.)**

Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.

**10140105 Intl Prof Field Study: Communications (3 cr.)**

Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.

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<b>10140106 Intl Prof Field Study: Culinary-Hospitality (3 cr.)</b>	Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.
<b>10140107 Intl Prof Field Study: Healthcare (3 cr.)</b>	Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.
<b>10140108 Intl Prof Field Study: IT (3 cr.)</b>	Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.
<b>10140109 Intl Prof Field Study: NDT (3 cr.)</b>	Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.
<b>10140110 Intl Prof Field Study: OTA Fieldwork 1 (3 cr.)</b>	Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.
<b>10140111 Intl Prof Field Study: OTA Practice &amp; Mgt (3 cr.)</b>	Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.

## Course Descriptions

<b>10140112 Intl Prof Field Study: Natural Resources (3 cr.)</b>	Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.
<b>10140113 Intl Prof Field Study: Oral/Interpersonal (3 cr.)</b>	Students attain first-hand knowledge of working and studying in the international environment. Students explore their profession in another country, while also gaining cultural insight and understanding of differing values and behaviors in another society and workplace. Topics include comparison of the United States and the target country's educational, professional, occupational, and cultural practices.
<b>10140160 Cross-Cultural Experience (3 cr.)</b>	Engage in a transformative Cross-Cultural Experience by delving into cultural learning in the classroom, culminating in travel to an immersive cultural experience in a domestic or international setting. By course end, you'll explore diverse cultures, cultivate cultural competence, recognize cultural biases, become more adept in intercultural communication, and increase understanding, empathy, and adaptability crucial for today's global society.
<b>141 - Global Language and Studies</b>	
<b>10141111 Spanish 2 Health Care (3 cr.)</b>	Presents more complex phrases, questions and in-depth vocabulary for health-related tasks. At the conclusion of this course, the participant will have the ability to understand more complex spoken Spanish, gain further insight into cross-cultural issues as well as to obtain information about more complex health symptoms and illnesses. Spanish 1 Health Care (10-141-110) or consent of instructor is required.
<b>10141115 Spanish 1 Law Enforcement (3 cr.)</b>	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.
<b>10141125 Spanish for Early Childhood Educators (3 cr.)</b>	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.

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- 10141155 Spanish Language and Culture for Dairy (3 cr.)** Introduces the basics of the Spanish language for dairy operations. Develop the language skills and cultural understanding to communicate confidently with Spanish speakers on the farm. Learn the basics of pronunciation, conversation, and common dairy terminology related to daily tasks, and protocols.
- 10141166 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
- 10145101 Entrepreneurial Mindset (1 cr.)** Inspires and engages participants in fundamental concepts of an entrepreneurial mindset and the unlimited opportunities it can provide. Empowers learners through entrepreneurial thinking and immerses them in entrepreneurial experiences that enable them to develop entrepreneurial skills.
- 10145104 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.
- 10145105 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.
- 10145107 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.

## Course Descriptions

<b>10145108 Business Start-up &amp; Launch Experience (3 cr.)</b>	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.
<b>10145109 Small Business Mentorship (1 cr.)</b>	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.
<b>10145115 Entrepreneurial Thinking (3 cr.)</b>	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.
<b>10145116 Financial Intelligence for Entrepreneurs (3 cr.)</b>	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.
<b>10145120 E-seed Entrepreneurship Training (2 cr.)</b>	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.
<b>10145130 E-seed™: Business Launch (3 cr.)</b>	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.
<b>150 - IT - Networking &amp; System Adm</b>	
<b>10150104 Virtualization Infrastructure (3 cr.)</b>	Covers the infrastructure components related to virtual environments, including storage, enterprise systems, virtual networks, and cloud components.
<b>10150105 Virtualization Technologies (3 cr.)</b>	Introduces virtualization technologies including VMware, Citrix and Microsoft Hyper-V. Hands-on lab activities will be used to install and configure each virtualized environment.

## Course Descriptions

- 10150111 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.
- 10150116 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.
- 10150122 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.
- 10150125 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.
- 10150126 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.
- 10150127 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

<b>10150141 Operating Systems Security (2 cr.)</b>	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.
<b>10150144 Ethical Hacking (3 cr.)</b>	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.
<b>10150146 Wireless Networking (2 cr.)</b>	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.
<b>10150147 Linux (2 cr.)</b>	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.
<b>10150148 Linux Administration (3 cr.)</b>	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.
<b>10150155 Linux Essentials - Just Enough Linux (1 cr.)</b>	Covers Basic Linux topics including operating system basics, file management, graphic user interfaces and the command line interface.
<b>10150156 Windows Server (3 cr.)</b>	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.
<b>10150159 Server Applications (3 cr.)</b>	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.
<b>10150160 Network Security (3 cr.)</b>	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.

## Course Descriptions

- 10150161 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.
- 10150162 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.
- 10150163 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.
- 10150164 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.
- 10150168 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.
- 151 - IT - Security**
- 10151101 Risk and Incident Management (3 cr.)** Examines standards-based, proven methodologies for assessing and managing risk. Selecting and implementing security controls that ensure compliance with applicable laws, regulations, policies and directives. Upon completion of a risk assessment, students will learn the phases of cybersecurity incident response in a way that limits damages, reduces recovery time and manages the overall cost of an incident.
- 10151102 Cybersecurity Capstone (3 cr.)** Evaluates skills and knowledge gained throughout the cybersecurity program. Students will identify security strategies, implement secure infrastructures, conduct security testing, analyze security data, mitigate risk and develop security documentation.

## Course Descriptions

**10151103 Advanced Ethical Hacking (3 cr.)** Introduces the techniques security professionals use to discover flaws in online systems. In this course, students work on hands-on, team-based scenarios where they assume the role of a red team, actively finding and analyzing potential vulnerabilities in various systems. Students will learn how to identify, exploit, and report weaknesses through real-world scenarios while proposing effective mitigation strategies to strengthen system defenses. Emphasizing collaboration, communication, and critical thinking, this course equips students with the technical skills and ethical grounding to tackle emerging cybersecurity threats.

### 152 - IT - Software Development

**10152100 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.

**10152101 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).

**10152105 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.

**10152106 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.

**10152108 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.

**10152111 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.

## Course Descriptions

<b>10152114 Computer Programming C++ (3 cr.)</b>	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.
<b>10152116 C# Intermediate Programming (3 cr.)</b>	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.
<b>10152121 PHP (3 cr.)</b>	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.
<b>10152125 ASP.Net (3 cr.)</b>	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.
<b>10152126 Agile Development (3 cr.)</b>	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.
<b>10152131 WordPress (3 cr.)</b>	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.
<b>10152132 Advanced JavaScript (3 cr.)</b>	Teaches students to utilize JavaScript frameworks like React, Vue, or Angular, to build component-based front ends. Students will also research additional frameworks and report on their findings.

## Course Descriptions

<b>10152134 Modern JavaScript (3 cr.)</b>	Covers programming concepts for developing front-end and back-end JavaScript applications. General concepts include arrays, functions, higher-order functions, and asynchronous code. Front-end topics include DOM manipulation, local storage, and making API calls. Back-end topics include working with the NodeJS runtime, using ExpressJS to create REST APIs, and utilizing NoSQL for data storage.
<b>10152155 Database Concepts (2 cr.)</b>	Uses hands-on exercises and projects to give students experience with using databases for data storage and retrieval. To encourage students to become more sophisticated database users, background information and general relational database concepts are included.
<b>10152168 Data Access for Programmers (3 cr.)</b>	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).
<b>10152170 Data Administration Techniques (3 cr.)</b>	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.
<b>10152180 Introduction to Mobile Development (3 cr.)</b>	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.
<b>10152182 Android Programming (3 cr.)</b>	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.
<b>10152184 Version Control Essentials (1 cr.)</b>	Covers basic version control topics using Git. Topics include local and remote repositories, initializing, cloning, pushing and pulling, merging repositories, and working with branches.
<b>154 - IT - Computer Support</b>	
<b>10154101 Emerging Technologies and Trends (3 cr.)</b>	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.

## Course Descriptions

<b>10154102 IT Customer Service Skills (2 cr.)</b>	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.
<b>10154105 Advanced Desktop Management (2 cr.)</b>	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.
<b>10154108 IT Service Desk Capstone (2 cr.)</b>	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.
<b>10154109 IT Service Desk Concepts (3 cr.)</b>	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.
<b>10154110 Enterprise Client (3 cr.)</b>	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.
<b>10154111 Device Repair and Maintenance (3 cr.)</b>	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.
<b>10154111DE Device Repair and Maintenance (3 cr.)</b>	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.
<b>10154114 Infrastructure Automation (3 cr.)</b>	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

<b>10156101 Course # Reserved by State: Database Concepts and Design (0 cr.)</b>	State course number reserved by MSTC, developed through a grant, recorded in WIDS.
<b>10156102 Course # Reserved by State: SQL Development (0 cr.)</b>	State course number reserved by MSTC, developed through a grant, recorded in WIDS.
<b>10156103 Python Data Programming (3 cr.)</b>	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.
<b>10156104 Data Analytics, Introduction (3 cr.)</b>	Technologies and techniques for identifying, collecting, preparing, processing, and analyzing data relevant to business questions.
<b>10156105 Data Analytics, Intermediate (3 cr.)</b>	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.
<b>10156106 Programming in R (3 cr.)</b>	Programming in the R statistical computing language. Examples cover data manipulation, analysis, and plotting.
<b>10156107 ETL &amp; Data Warehousing (3 cr.)</b>	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.
<b>10156108 Business Intelligence &amp; Data Visualization (3 cr.)</b>	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.
<b>10156109 Big Data (3 cr.)</b>	Explores the problems created by, strategies to tackle, and technologies to work with large data sets.
<b>10156110 Data Analytics Capstone (3 cr.)</b>	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.
<b>10156111 Introduction to AI (1 cr.)</b>	Provides students with a foundational understanding of artificial intelligence and its applications across industries. Through hands-on exercises and real-world examples, students will explore ethical considerations, practical tools like ChatGPT, and ways to leverage AI for productivity, data analysis, and decision-making.

### 160 - Business Health Services

## Course Descriptions

<b>10160100 Intro to Medical Administrative Careers (1 cr.)</b>	Introduces various aspects of medical administrative careers. Explores a variety of topics including career expectations, future employment opportunities and current employment trends.
<b>10160102 Medical Office Procedures (3 cr.)</b>	Emphasizes the principles of medical office procedures. Students will gain experience in understanding medical law and ethics, utilizing effective oral and written communication, and managing medical office procedures including appointment scheduling, patient reception and registration, medical records, medical billing, health insurance, business operations, human resource functions, and financial management. Students will also gain knowledge in locating and obtaining a position in a medical office.
<b>10160106 Business Health Simulation (3 cr.)</b>	Provides simulated on-the-job training that allows students to apply the theories, skills and techniques studied in the Medical Office Assistant program. Students work a minimum of 144 hours in a simulated business health environment. The simulation includes weekly discussions related to job search and career planning.
<b>10160107 Professionalism for Medical Admin. Professionals (2 cr.)</b>	Develops professional traits and behaviors related to the Business Health Services industry. Students will focus on business etiquette, ethics, diversity, customer service, problem solving, and communication
<b>10160108 Health Insurance Principles (3 cr.)</b>	Provides an overview of health insurance terminology. Students gain knowledge of various insurance programs including private health insurance, dental insurance, Workersâ€™ <sup>TM</sup> Compensation, disability insurance, hospital insurance and government plans.
<b>10160109 Business Health Documentation (3 cr.)</b>	Provides introduction to business health documentation practices. Students will develop skills in the areas of medical and English language, proofreading, editing and research.
<b>10160112 Business Health Billing Applications (3 cr.)</b>	Provides an overview of billing and collection processes within the Business Health Services industry. Students will gain skill in understanding forms, billings, collections and insurance.
<b>170 - Broadcast Captioning</b>	
<b>10170100 Digital Court Reporting, Introduction to (2 cr.)</b>	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.
<b>10170102 Digital Audio Reporting Lab (2 cr.)</b>	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.

## Course Descriptions

<b>10170103 Legal Transcription (3 cr.)</b>	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.
<b>10170104 Legal Transcription 2 (3 cr.)</b>	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.
<b>10170111 Speech Recognition Technology (2 cr.)</b>	Explore the use of Automatic Speech Recognition software (ASR) in the role of Digital Court Reporter. ASR is a technology that converts spoken words into written text. ASR allows Digital Court Reporters to seamlessly incorporate digital recordings into fast and efficient written transcript creation.
<b>10170115 DCR Grammar &amp; Punctuation 1 (3 cr.)</b>	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.
<b>10170116 DCR Grammar &amp; Punctuation 2 (3 cr.)</b>	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.
<b>182 - Logistics &amp; Material Mgmt</b>	
<b>10182100 APICS CPIM - Cert. Plan &amp; Inventory Mgmt (4 cr.)</b>	Introduces concepts for planning and controlling flow of products and services into, through, and out of an organization. Explains fundamental relationships among activities that occur in the supply chain network from suppliers to customers. The concepts apply to both manufacturing and service organizations. Aids and supports APICS certification exam preparation.
<b>10182101 APICS Cert Transformation for Supply Chain (2 cr.)</b>	Intended to support professionals engaged in supply chain transformation intending to sit for the APICS CTSC certification exam, the course is designed to build ones' knowledge of, and ability to apply the supply chain transformation body of knowledge to evolve, adapt, and transform their supply chains.

## Course Descriptions

### **10182118 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.

### **10182119 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.

### **10182120 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.

### **10182121 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.

### **10182122 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.

### **10182123 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.

### **10182130 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.

## Course Descriptions

<b>10182131 Fundamentals of Supply Chain Management (3 cr.)</b>	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.
<b>10182132 APICS CLTD-Cert. Logistics Transport. Dist. (3 cr.)</b>	Is a 54-hour course designed for people preparing to take the APICS Certified in Logistics, Transportation and Distribution (CLTD) certification exam. Explores essential knowledge needed for the logistics, transportation and distribution industry. A review of the scope of the exam, a practice examination, test-taking tips, and registration information are provided.
<b>10182133 APICS CPIM Part 1 (2 cr.)</b>	Introduces the definitions and concepts for planning and controlling the flow of products and services into, through, and out of an organization. Explains fundamental relationships among the various activities that occur in the supply chain network from suppliers to customers. Aids and supports APICS certification exam preparation.
<b>10182134 APICS CPIM Part 2 (3 cr.)</b>	Combines key concepts from the field of operations management. Details four areas of knowledge: Master Planning of Resources, Detailed Scheduling and Planning, Execution and Control of Operations, and Strategic Management of Resources. The concepts included apply to both manufacturing and service organizations. Aids and supports APICS certification exam preparation.
<b>10182135 APICS CSCP-Cert. Supply Chain Professional (3 cr.)</b>	Introduces, explores, and applies concepts, strategies, processes, tools, and technologies applied to managing the end-to-end flow of materials, information, and value in a supply chain. Supply Chain Design, Planning and Execution, and Best Practices are covered. This course supports individuals preparing for APICS Certified Supply Chain Professional (CSCP) certification exam.
<b>10182136 Systems and Technologies (3 cr.)</b>	Explore the essential planning systems and technologies in modern supply chain management. Students will gain foundational knowledge of ERP systems, understanding their role in integrating various business processes. The course covers supply chain data flows, emphasizing the importance of data accuracy, cybersecurity, and real-time information. Additionally, students will explore emerging technologies: such as IoT, blockchain, and AI, and their impact on supply chain efficiency and innovation.

## Course Descriptions

<b>10182137 Demand Driven Planner (DDP) Certification Prep Course (2 cr.)</b>	The Demand Driven Planner (DDP) certification preparatory class is designed for planning, purchasing and supply chain personnel responsible for implementing and maintaining a DDMRP implementation. Demand Driven Planner program is comprised of 13 modules of in-depth DDMRP education. The DDP Program is THE official preparatory course for the Demand Driven Institutes™ Demand Driven Planner Professional (DDPP) Certification test.
<b>10182138 Purchasing Fundamentals (3 cr.)</b>	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.
<b>10182142 APICS CLTD-Cert. Logistics Transport. Dist. (3 cr.)</b>	Designed for people preparing to take the APICS Certified in Logistics, Transportation and Distribution (CLTD) certification exam. Explores essential knowledge needed for the logistics, transportation and distribution industry. A review of the scope of the exam, a practice examination, test-taking tips, and registration information are provided.
<b>10182145 APICS CSCP-Cert. Supply Chain Professional (3 cr.)</b>	Introduces, explores, and applies concepts, strategies, processes, tools, and technologies applied to managing the end-to-end flow of materials, information, and value in a supply chain. Supply Chain Design, Planning and Execution, and Best Practices are covered. This course supports individuals preparing for APICS Certified Supply Chain Professional (CSCP) certification exam.
<b>196 - Supervision &amp; Leadership Devel</b>	
<b>10196103 Continuous Improvement Basics for Office (1 cr.)</b>	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.
<b>10196104 Survey of Business Careers (2 cr.)</b>	Designed for students in the early stages of their college careers, this class focuses on career exploration for the business field, academic options for studying business, and college success strategies for business students. Upon completion of this course, the student will be able to: 1) discuss careers in the business field and the benefits and challenges of each, 2) identify the most appropriate business academic program that aligns with their goals and future plans, and 3) explain when and how they might use college success strategies and resources in pursuit of their academic goals.

## Course Descriptions

<b>10196108 Contemporary Business Issues (3 cr.)</b>	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.
<b>10196109 Leading and Supervising Skills (1 cr.)</b>	Introduces the supervisor's job, supervisory leadership, leading varied personalities, effective communication, constructive feedback and motivation and morale. Hone a variety of supervisory and management skills to improve performance as a supervisor or working manager. Utilizes a practical approach tailored to workplace environments or specific employers.
<b>10196110 Cost Controls and Budgeting (3 cr.)</b>	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.
<b>10196111 Lean Leadership Series: Building a Lean Management System (1 cr.)</b>	This series reviews the Lean Management System (LMS) model and how to implement the LMS methodologies to improve the flow of information from the front-line employees to senior leaders and back. A well deployed system builds engagement of all employees and improves communication.
<b>10196112 Personal &amp; Workplace Leadership (1 cr.)</b>	Focuses on four skill areas that build leadership capability and improve personal performance. Learn to build trust, develop your personal leadership style, coach and provide feedback, and deal with difficult behaviors. Participants work with a trained coach to develop a personal action plan using 360-degree feedback and applied development goals.
<b>10196116 Nonprofit Leadership Capstone (3 cr.)</b>	Combining personal experience, competencies gained in the Nonprofit Leadership Institute, and successful completion of required assessment tools in the certificate, this course is designed to measure the student's ability to demonstrate the skills required of an executive director, development director, or operations director. Students are required to complete this course after all other required courses in the certificate are successfully completed.
<b>10196121 Safety, Principles of (2 cr.)</b>	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.
<b>10196131 Problem Solving (2 cr.)</b>	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.

## Course Descriptions

<b>10196139 Employee Training and Development (3 cr.)</b>	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.
<b>10196141 Six Sigma Green Belt Training- 72 hr (4 cr.)</b>	Course provides background and tools needed to prepare for the ASQ Six Sigma Green Belt Certification Exam. The DMAIC process is explored through quality tools, basic statistics, advanced statistical tools, project management and group facilitation.
<b>10196142 Lean Enterprise Project Certificate (2 cr.)</b>	Designed for employees at all levels of an organization who want to professionalize their lean skills and apply them to business and service functions. The certificate provides mentor-guided training that allows participants to test what they've learned while relying on an expert to help plan workplace improvements. The certificate incorporates two hours of one-on-one involvement with a lean instructor to assist with a workplace project.
<b>10196143 Lean Enterprise Certificate for Government/Non-Profit (2 cr.)</b>	Explore lean and continuous improvement approaches that are changing government and public sector agencies by reducing waste, improving service levels, optimizing processes and delivering performance improvement. Each session focuses on tools and techniques that apply to any work process and integrate specific case studies relevant to public service organizations.
<b>10196150 The Basics of Supervision (2 cr.)</b>	Focuses on the basics of effective leadership, to include the supervisor's job and the skills needed to perform effectively, effective leadership skills, tools to motivate, effective listening skills, how to create and manage teamwork, steps for getting ideas across effectively, effective problem-solving skills, and managing interpersonal and employee conflict.
<b>10196151 The Performance Management Process (2 cr.)</b>	Focuses on applying the skills learned in The Basics of Supervision to manage performance effectively. This includes an overview of the Performance Management Process, setting performance expectations and standards, coaching and training employees, giving earned praise, coaching for continuous improvement, performance development and planning, giving constructive feedback, coaching to correct, and corrective action and discipline.
<b>10196171 Management Development Field Study (1 cr.)</b>	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.

## Course Descriptions

- 10196188 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.
- 10196190 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.
- 10196191 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.
- 10196192 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 - Housing & Home Furnishings

- 10304107 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.
- 10304110 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.
- 10304125 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.
- 10304126 Reupholstery (2 cr.)** Studies manufacturers' upholstery methods and presents the techniques of upholstering and the art of reupholstering. Students reupholster a furniture piece.
- 10304127 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.

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<b>10304128 Commercial CAD (2 cr.)</b>	Introduces students to basic AutoCAD and Configura CET techniques. Students will learn to navigate both interfaces utilizing drawing and editing tools, as well as apply layers, blocks, and annotations to 2D AutoCAD drawings. The fundamentals of Configura CET will include utilizing the tools and symbols necessary to create a 3D office layout.
<b>10304129 Textiles (3 cr.)</b>	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.
<b>10304134 Advanced Interior Design (2 cr.)</b>	Introduces advanced techniques for the design and calculation of draperies, bedding, kitchen and bath projects using workroom forms and computerized drawings.
<b>10304135 Business Principles for Interior Design (1 cr.)</b>	Presents the business aspects of a career in interior design. Topics include business forms, billing procedures and business setup.
<b>10304138 Internship 1 Kitchen &amp; Bath (4 cr.)</b>	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.
<b>10304143 Design Applications (3 cr.)</b>	Applies previous course learning experiences to hypothetical residential and commercial design problems. Board layouts and oral presentations accompany each solution.
<b>10304144 History of Furniture (3 cr.)</b>	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.
<b>10304150 Computer Basics for Design (1 cr.)</b>	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.
<b>10304152 Flooring (1 cr.)</b>	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.
<b>10304153 Basic Kitchen and Bath (3 cr.)</b>	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.

## Course Descriptions

<b>10304154 Construction Applications - Mechanical &amp; Lighting (3 cr.)</b>	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.
<b>10304155 Business Procedures for Designers (3 cr.)</b>	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.
<b>10304156 Advanced Kitchen &amp; Bath Design (3 cr.)</b>	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.
<b>10304157 Materials &amp; Estimating (3 cr.)</b>	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.
<b>10304161 Advanced CAD (2 cr.)</b>	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.
<b>10304166 Presentation Techniques (3 cr.)</b>	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.
<b>10304167 Drafting Skills for Interiors (3 cr.)</b>	Introduces the techniques and language of architectural drafting and construction. Basic floor plan and elevation drafting is practiced.
<b>10304171 Internship 1 Interior Design (3 cr.)</b>	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.

## Course Descriptions

<b>10304173 Interior Display (2 cr.)</b>	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.
<b>10304174 Introduction to Commercial Design (3 cr.)</b>	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.
<b>10304176 Internship - Kitchen &amp; Bath (3 cr.)</b>	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.
<b>307 - Early Childhood Education</b>	
<b>10307108 ECE: Early Language &amp; Literacy (3 cr.)</b>	This 3-credit course explores strategies to encourage the development of early language and literacy knowledge and skill building in children birth to 8 years of age.
<b>10307110 ECE: Social Studies, Art, &amp; Music (3 cr.)</b>	This 3-credit course will focus on beginning level curriculum development in the specific integrated content areas of social studies, art, music, & movement (SSAMM) for children from birth to 8 years of age.
<b>10307112 ECE: STEM (3 cr.)</b>	This 3-credit course will focus on beginning level curriculum development in the specific integrated content areas of science, technology, engineering and mathematics (STEM) in children birth to age 8.
<b>10307115 Infant Toddler Capstone (3 cr.)</b>	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.
<b>10307118 DPI ACCT Elective (3 cr.)</b>	Early Childhood Education elective.
<b>10307130 Autism Spectrum Disorder (ASD) - Introduction (1 cr.)</b>	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.

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<b>10307131 Autism Spectrum Disorder, Social Integration (2 cr.)</b>	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.
<b>10307132 Autism Spectrum Disorder, Teaching Methods (3 cr.)</b>	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.
<b>10307135 Family Child Care Capstone (3 cr.)</b>	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.
<b>10307148 ECE: Foundations of Early Childhood (3 cr.)</b>	This 3-credit course introduces the early childhood profession through a historical overview of the field. The course will explore program trends, quality indicators, and developmentally appropriate practices for children birth to 8 years of age.
<b>10307149 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10307151 ECE: Infant &amp; Toddler Development (3 cr.)</b>	This 3-credit course explores infant and toddler development as it applies to an early childhood education setting. This course focuses on children's development from conception through thirty-six months (3 years). This course includes training for Wisconsin Breastfeeding Friendly Child Care certification.
<b>10307158 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10307160 ECE: Field Experience 1 (3 cr.)</b>	This 3-credit introductory field experience course introduces the foundations of early childhood education under guided supervision of a mentor teacher in an early childhood setting, working with children birth through age 8. This course meets the requirements for the Wisconsin Model Early Learning Standards 18-hour training.
<b>10307167 ECE: Hlth Safety &amp; Nutrition (3 cr.)</b>	This 3-credit course examines the topics of health, safety, and nutrition within the context of the early childhood educational setting for children from birth through 8 years of age. This course includes training for Abusive Head Trauma, SIDS, and Mandated Reporter certifications.

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<b>10307169 ECE: Infant Toddler Group Care (3 cr.)</b>	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.
<b>10307170 ECE: Field Experience 2 (3 cr.)</b>	This 3-credit intermediate field experience course includes assisting the mentor teacher in carrying out classroom routines and implementing developmentally appropriate learning experiences that promote child development and learning through play for children birth to age 8.
<b>10307179 ECE: Child Development (3 cr.)</b>	This 3-credit course examines child development within the context of the early childhood education setting. This course focuses on children ages 3-8 years of age.
<b>10307180 ECE: Early Learning Standards (1 cr.)</b>	Enhances the student's ability to analyze the guiding principles and the five developmental domains related to the WI Early Learning Standards, apply the WMELS to various developmentally appropriate curriculum models, activities and assessments, integrate the WI Early Learning Standards into the program's teaching cycle, evaluate learning and assessment activities using the early learning standards for each child.
<b>10307181 ECE: Child Care Operations Management (3 cr.)</b>	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.
<b>10307182 ECE: Child Care Financial Management (3 cr.)</b>	Includes a review of principles and practices of budget planning, budget preparation and fiscal management. Must be a lead teacher or program director.
<b>10307184 ECE: Child Care External Environment (3 cr.)</b>	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.
<b>10307185 ECE: Child Care Best Practices (3 cr.)</b>	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.

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<b>10307186 ECE: Child Care Administrator Capstone (3 cr.)</b>	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.
<b>10307187 ECE: Children w Diff Abilities (3 cr.)</b>	This 3-credit course focuses on the child with differing abilities in an inclusive early childhood education setting while examining strategies for cultivating partnerships with families and community supports for children from birth to 8 years of age.
<b>10307188 ECE: Guiding Child Behavior (3 cr.)</b>	This 3-credit course examines positive strategies to guide children's behavior in the early childhood education setting for children from birth to 8 years of age. This course meets the requirements of the Wisconsin Pyramid Model training.
<b>10307190 ECE: Field Experience 3 (3 cr.)</b>	This 3-credit advanced field experience course focuses on supporting young children's development birth to age 8 through observation, assessment, and implementation of developmentally appropriate teaching strategies.
<b>10307195 ECE: Family &amp; Community Relationships (3 cr.)</b>	This 3-credit course will examine the role of relationships with family and community in early childhood education for children from birth to 8 years of age. In this course, students will complete the Strengthening Families Training.
<b>10307204 Supervise/Admin ECE Programs (3 cr.)</b>	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.
<b>10307205 ECE: Make It &amp; Take It (3 cr.)</b>	Creating a "toolbox" of materials and activities to use while working with children, this course is designed to provide students with practical tools and resources to enhance early childhood teaching practices.
<b>10307210 ECE: Field Experience 4 (3 cr.)</b>	This final 3-credit pre-professional field experience course focuses on demonstrating a comprehensive understanding of children birth to age 8, and families. An emphasis is on practicing the lead teacher role to design, implement and evaluate a connected unit of learning experiences.
<b>10307301 Introduction to Family Child Care (3 cr.)</b>	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.

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<b>10307302 Family Child Care: Responsive Programming (3 cr.)</b>	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.
<b>10307303 FCC: Financial Management &amp; Planning (3 cr.)</b>	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.
<b>314 - Baking</b>	
<b>10314109 Artisan Breads and Rolls (2 cr.)</b>	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.
<b>10314110 Baking Essentials (2 cr.)</b>	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.
<b>10314111 Advanced Cake Decorating 1 (1 cr.)</b>	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.
<b>10314112 Baking and Pastry Operations 1 (3 cr.)</b>	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.
<b>10314113 Baking Industry Experience (1 cr.)</b>	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.
<b>10314114 Plated Desserts (1 cr.)</b>	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.

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<b>10314115 Advanced Cake Decorating 2 (1 cr.)</b>	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.
<b>10314116 Chocolate (1 cr.)</b>	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.
<b>10314117 Healthy and Natural Baking (1 cr.)</b>	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.
<b>10314118 Baking and Pastry Operations 2 (3 cr.)</b>	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.
<b>316 - Culinary Arts</b>	
<b>10316100 Culinary Internship (2 cr.)</b>	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.
<b>10316101 Food Production, Introduction to (3 cr.)</b>	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.
<b>10316110 Culinary Fundamentals (3 cr.)</b>	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.
<b>10316118 Sanitation for Food Service Operations (1 cr.)</b>	Focuses on the development of skills to follow sanitation and hygiene provisions in state codes. The Servsafe certification test is included.
<b>10316119 Nutrition for Culinary Arts (1 cr.)</b>	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.
<b>10316120 Culinary Applications (2 cr.)</b>	Applies the basic principles of culinary calculations involved in the purchase, preparation and use of goods related to the hospitality field.

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<b>10316121 Baking Basics (2 cr.)</b>	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.
<b>10316122 Baking Techniques (2 cr.)</b>	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.
<b>10316123 Hospitality Supervision (3 cr.)</b>	Introduces fundamental management techniques including leadership styles; interpersonal skills; planning, organizing and decision-making processes, as well as interviewing, hiring, training and evaluating employees.
<b>10316124 Culinary Skills Development (1 cr.)</b>	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.
<b>10316125 Culinary Foundations (1 cr.)</b>	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.
<b>10316133 Meat Identification (1 cr.)</b>	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.
<b>10316134 Restaurant Operations - Preparation (4 cr.)</b>	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.
<b>10316135 Restaurant Operations - Service (2 cr.)</b>	Applies the principles and procedures of food service to a restaurant operation. This course covers dining service, including dining room management, menu planning, point of sale system operation, seating, and customer service.
<b>10316136 Quantity Cooking (4 cr.)</b>	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.

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<b>10316137 Short Order Cooking (4 cr.)</b>	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
<b>10316140 Meat Fabrication Internship 1 (2 cr.)</b>	Provides the meat processing specialist student the opportunity to investigate and learn through prescribed, hands-on experiences in the meat processing industry. It is specifically required that the learner be working in a meat processing facility and participate in various defined production methods and procedures.
<b>10316141 Food, Beverage and Labor Cost Controls (3 cr.)</b>	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.
<b>10316142 Catering and Special Event Planning (2 cr.)</b>	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.
<b>10316150 Food Service Independent Study (1 cr.)</b>	Gives credit for a variety of educational explorations outside the traditional classroom setting. These activities include attending conferences and completing special courses and projects.
<b>10316151 Asian Cuisine (1 cr.)</b>	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.
<b>10316152 European Cuisine (1 cr.)</b>	Applies cooking principles specific to the cuisine of various European countries. Food traditions and customs are emphasized.
<b>10316153 Meat Fabrication Internship 2 (2 cr.)</b>	Provides the meat processing specialist student a continuation of Meat Fabrication Internship 1 with different prescribed, hands-on production methods and procedures. This internship could be done at the same meat processing facility as the first internship or could be completed at a different operation.
<b>10316154 Ice Carving (1 cr.)</b>	Covers the ice carving techniques used in on-premise catering. Each student completes an ice carving project.
<b>10316155 Culinary Competition (2 cr.)</b>	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.

## Course Descriptions

<b>10316170 Science of Baking (2 cr.)</b>	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.
<b>10316172 Cake Production (1 cr.)</b>	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.
<b>10316173 Confections (1 cr.)</b>	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.
<b>10316174 Pastries (1 cr.)</b>	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.
<b>10316181 Molecular Gastronomy (2 cr.)</b>	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.
<b>10316183 Grilling, Smoking &amp; BBQ (2 cr.)</b>	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.
<b>10316184 Advanced Garde Manger (2 cr.)</b>	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.
<b>10316185 Pairing Wines with Foods (2 cr.)</b>	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.
<b>10316186 Latin American Cuisine (1 cr.)</b>	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.

## Course Descriptions

<b>10316187 Local, Sustainable &amp; Organic Food Products (2 cr.)</b>	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.
<b>10316189 Meat Processing Internship 1 (3 cr.)</b>	Provides the meat processing specialist student the opportunity to investigate and learn through prescribed, hands-on experiences in the meat processing industry. It is specifically required that the learner be working in a meat processing facility and participate in various defined production methods and procedures.
<b>10316191 Meat Processing Internship 2 (1 cr.)</b>	Provides the meat processing specialist student a continuation of Meat Processing Internship 1 with different prescribed, hands-on production methods and procedures. This internship could be done at the same meat processing facility as the first internship or could be completed at a different operation.
<b>402 - Aeronautics</b>	
<b>10402101 Private Pilot-Ground (3 cr.)</b>	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.
<b>10402102 Aviation Weather (3 cr.)</b>	Covers ground training of aviation weather, aviation human factors, aviation safety, and emergency operations to the Commercial Pilot certificate level.
<b>10402103 Instrument-Ground (3 cr.)</b>	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.
<b>10402104 Commercial-Ground (3 cr.)</b>	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.
<b>10402105 Aerodynamics (3 cr.)</b>	Covers ground training of aerodynamics and aircraft performance, aircraft design and limitations, and theories of flight to the Commercial Pilot certificate level.

## Course Descriptions

- 10402106 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.
- 10402113 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.
- 10402115 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.
- 10402116 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.
- 10402117 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.

## Course Descriptions

- 10402118 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.
- 10402119 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.
- 10402121 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.

## Course Descriptions

- 10402122 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.
- 10402125 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.
- 10402126 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.
- 10402128 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.

## Course Descriptions

<b>10402129 Commercial Flight 2B (1 cr.)</b>	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.
<b>10402131 Aviation Safety &amp; Human Factors, Intro to (1 cr.)</b>	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.
<b>10402132 Fundamentals of ATC and Airspace (1 cr.)</b>	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).
<b>10402133 Applied Aviation Safety and Human Factors (1 cr.)</b>	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.
<b>10402154 Commercial Flight 4 (1 cr.)</b>	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.

## Course Descriptions

<b>10402173 CFI-Flight 3 (1 cr.)</b>	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.
<b>10402174 CFI-Flight 4 (1 cr.)</b>	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.
<b>10402175 CFI-Flight 5 (1 cr.)</b>	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.
<b>10402181 Commercial Flight 3A (1 cr.)</b>	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.
<b>10402182 Commercial Flight 3B (1 cr.)</b>	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.

## Course Descriptions

<b>10402184 CFI-Flight 1B (1 cr.)</b>	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.
<b>10402187 CFI-Flight 2A (1 cr.)</b>	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.
<b>10402188 CFI-Flight 2B (1 cr.)</b>	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.
<b>10402190 CFI-Flight 1A (1 cr.)</b>	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.

### **405 - Auto Body - Chassis And Finish**

<b>10405119 Industry Trends Vehicle Repair (1 cr.)</b>	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.
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## Course Descriptions

<b>10405120 Collision Repair Mech - HVAC (2 cr.)</b>	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.
<b>10405122 Collision-Drive Systems (2 cr.)</b>	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.
<b>10405128 Collision Repair Electric Sys-SRS (1 cr.)</b>	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.
<b>10405129 Collision Steering &amp; Suspension Systems (3 cr.)</b>	Focuses on developing the skills needed to diagnose and repair steering and suspension systems including wheel alignment procedures on collision damaged vehicles.
<b>10405130 Collision Electrical &amp; Electronic Systems 1 (2 cr.)</b>	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.
<b>10405132 Collision Repair Welding-Bridge (1 cr.)</b>	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.
<b>10405146 Collision Repair Welding 2 (2 cr.)</b>	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.
<b>10405147 Intro, Transportation Welding (1 cr.)</b>	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.

## Course Descriptions

<b>10405148 Metal Refinishing (1 cr.)</b>	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.
<b>10405149 Paint Refinishing (1 cr.)</b>	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.
<b>10405150 Refinishing Set-up and Safety (2 cr.)</b>	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.
<b>10405151 Part Removal and Installation (3 cr.)</b>	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.
<b>10405152 Steel MIG Welding (2 cr.)</b>	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.
<b>10405153 Basic Nonstructural Repair (3 cr.)</b>	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.
<b>10405154 Advanced Nonstructural Repair (2 cr.)</b>	Focuses on developing the knowledge and skills necessary for advanced straightening of steel in complex areas as well as straightening aluminum exterior panels.
<b>10405155 Plastic Repair (2 cr.)</b>	Focuses on developing the knowledge and skills necessary for repairing the variety of plastics used on automotive vehicles.
<b>10405156 Surface Preparation and Masking (2 cr.)</b>	Focuses on developing the knowledge and skills necessary for masking and prepping surfaces in various refinishing scenarios.
<b>10405157 Basic Refinishing Application (3 cr.)</b>	Focuses on developing the knowledge and skills necessary for applying automotive refinish materials.
<b>10405158 Advanced Refinishing Application (3 cr.)</b>	Focuses on developing the knowledge and skills necessary for advanced application of automotive refinish materials, including blending and tri-stage finishes.
<b>10405159 Refinishing Color Theory (2 cr.)</b>	Focuses on developing the knowledge and skills necessary for tinting automotive refinish materials, which includes an in-depth look at color theory.

## Course Descriptions

<b>10405160 Estimating (3 cr.)</b>	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.
<b>10405161 Advanced Joining Techniques (2 cr.)</b>	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.
<b>10405162 Collision Structural Damage Analysis (3 cr.)</b>	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.
<b>10405163 Welded Panel Replacement (4 cr.)</b>	Focuses on developing skills needed to perform damage analysis and replacement of outer welded-on panels on collision damaged vehicles.
<b>10405164 Collision Heating &amp; Cooling (2 cr.)</b>	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.
<b>10405165 Collision Basic Electrical (2 cr.)</b>	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.
<b>10405166 Collision Avoidance (2 cr.)</b>	Focuses on developing skills needed to replace components on collision avoidance safety systems, airbags, and recalibrate advanced driver-assistance systems (ADAS).
<b>10405167 Collision Alignment (2 cr.)</b>	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.
<b>10405170 Collision Youth Internship 1 (1 cr.)</b>	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.
<b>10405171 Collision Youth Internship 2 (1 cr.)</b>	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.
<b>10405173 Plastics Repair-Bridge (1 cr.)</b>	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

<b>10405174 Refinishing Set-up and Safety-Bridge (1 cr.)</b>	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.
<b>10405175 Estimating-Bridge (2 cr.)</b>	Focuses on developing the skills needed to write computerized collision estimates.
<b>10405197 Advanced Joining Techniques Co-op (2 cr.)</b>	Provides students with work experience on customer vehicles at local collision centers. 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.
<b>10405198 Estimating Co-op (3 cr.)</b>	Provides students with work experience on customer vehicles at local collision centers. Focusing on developing skills needed to write collision analysis sheets. Learning how to identify the parts, materials, and labor needed to repair collision damaged vehicles.
<b>10405199 Collision Structural Damage Analysis Co-op (3 cr.)</b>	Provides students with work experience on customer vehicles at local collision centers. 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.
<b>10405200 Welded Panel Replacement Co-op (4 cr.)</b>	Provides students with work experience on customer vehicles at local collision centers. Focuses on developing skills needed to perform damage analysis and replacement of outer welded-on panels on collision damaged vehicles.
<b>10405201 Collision Heating &amp; Cooling Co-op (2 cr.)</b>	Provides students with work experience on customer vehicles at local collision centers. 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.
<b>10405202 Collision Alignment Co-op (2 cr.)</b>	Provides students with work experience on customer vehicles at local collision centers. 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.
<b>10405203 Part Removal and Installation Co-op (3 cr.)</b>	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. Provides students with work experience on customer vehicles at local collision centers.

## Course Descriptions

<b>10405204 Basic Nonstructural Repair Co-op (3 cr.)</b>	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. Provides students with work experience on customer vehicles at local collision centers.
<b>10405205 Advanced Nonstructural Repair Co-op (2 cr.)</b>	Focuses on developing the knowledge and skills necessary for advanced straightening of steel in complex areas as well as straightening aluminum exterior panels. Provides students with work experience on customer vehicles at local collision centers.
<b>10405206 Basic Refinishing Application Co-op (3 cr.)</b>	Focuses on developing the knowledge and skills necessary for applying automotive refinish materials. Provides students with work experience on customer vehicles at local collision centers.
<b>10405207 Advanced Refinishing Application Co-op (3 cr.)</b>	Focuses on developing the knowledge and skills necessary for advanced application of automotive refinish materials, including blending and tri-stage finishes. Provides students with work experience on customer vehicles at local collision centers.
<b>10405208 Refinishing Color Theory Co-op (2 cr.)</b>	Focuses on developing the knowledge and skills necessary for tinting automotive refinish materials, which includes an in-depth look at color theory. Provides students with work experience on customer vehicles at local collision centers.
<b>10405210 Collision Basic Electrical Co-op (2 cr.)</b>	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. Provides students with work experience on customer vehicles at local collision centers.
<b>10405211 Collision Avoidance Co-op (2 cr.)</b>	Focuses on developing skills needed to replace components on collision avoidance safety systems, airbags, and recalibrate advanced driver-assistance systems (ADAS). Provides students with work experience on customer vehicles at local collision centers.

### **409 - Wood Manufacturing Technology**

<b>31409301 Drafting for the Woodworking Industry (2 cr.)</b>	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.
<b>31409302 Material Properties and Applications (2 cr.)</b>	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.

## Course Descriptions

- 31409303 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.
- 31409317 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.
- 31409319 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.
- 31409321 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.
- 31409324 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.
- 31409326 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.
- 31409327 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.

## Course Descriptions

<b>31409328 Furniture Exploration 2 (3 cr.)</b>	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.
<b>31409330 Blueprint Reading for Woodworking Industry (2 cr.)</b>	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.
<b>31409331 CNC Router Operation (3 cr.)</b>	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.
<b>31409332 Traditional Cabinetry (2 cr.)</b>	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.
<b>31409352 Tool Design and Maintenance (1 cr.)</b>	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 - Residential Building Construct**

<b>10410101 Practical Property Training, Basic (2 cr.)</b>	Designed for property loss appraisers employed by insurance companies this course focuses on loss appraisal of basic residential property. Activities involve the installation and/or repair of common residential building systems and components. Emphasis is placed on critical thinking skills associated with estimating loss and negotiating repair settlements.
<b>10410102 Practical Property Training, Intermediate (2 cr.)</b>	Designed for property loss appraisers employed by insurance companies this course focuses on loss appraisal of sophisticated residential structures. Activities involve the installation and/or repair of upscale residential building systems and components. Emphasis is placed on problem solving, critical thinking and loss-estimating skills.
<b>10410103 Practical Property Trng. 103, Mechanical Systems (1 cr.)</b>	Designed for property loss appraisers employed by insurance companies this course focuses on gaining a basic understanding of mechanical systems in residential construction and loss appraisal of these systems. Activities include labs to help convey the basics of residential mechanical systems and case studies of loss situations.

## Course Descriptions

### **10410104 Practical Property Training, Commercial (2 cr.)**

Intended for property loss appraisers employed by insurance companies this course includes lab activities that focus on the building systems, components and structures typical of the commercial building environment. This course is designed to help the experienced property appraiser adapt and apply his/her skills of estimating and negotiating residential loss to the commercial environment.

### **31410315 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.

### **31410330 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.

### **31410331 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.

### **31410333 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.

### **31410334 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.

## Course Descriptions

- 31410335 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.
- 31410352 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.
- 31410354 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.
- 31410356 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.
- 31410358 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.
- 31410360 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.
- 31410362 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.

## Course Descriptions

### **31410363 Residential Building Codes and Regulations (RBC) (1 cr.)**

Explores codes, regulations and specifications governing construction of residential buildings. Students learn to locate and interpret technical information available in the Wisconsin Uniform Dwelling Code, county zoning regulations, local covenants and product literature. Following classroom review and discussion, students will be evaluated on their ability to comply with rules and regulations during actual building construction.

## **412 - Combustion Engines**

### **10412102 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.

### **10412103 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.

### **10412104 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.

### **10412105 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.

### **10412106 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.

### **10412107 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.

### **10412108 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.

### **10412109 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.

### **10412110 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.

### **10412116 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.

## Course Descriptions

<b>10412120 Heavy Duty Diesel Advanced Engine Repair (4 cr.)</b>	Covers major repair and diagnostics on heavy duty diesel engines found in modern commercial motor vehicles. Students disassemble, repair, assemble, and perform major diagnostics.
<b>10412123 Heavy Duty Diesel Engine Systems (4 cr.)</b>	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.
<b>10412124 Heavy Duty Diesel Capstone (1 cr.)</b>	Perform preventive maintenance inspections, service, and repair of commercial motor vehicles. Students will also complete Department of Transportation annual inspections.
<b>10412129 Diesel Equipment Internship (1 cr.)</b>	Provides students with work experience on actual vehicles in area shops.
<b>10412141 FABTECH Air Conditioning (2 cr.)</b>	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 AG-136 certification. This course is part of a training program called FABTECH, which is developed specifically for Fabick Cat, and participants are subject to screening by Fabick Cat, the sponsoring company.
<b>10412142 FABTECH Preventive Maint &amp; Equipment Repair (5 cr.)</b>	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 Fabick Cat, and participants are subject to screening by Fabick Cat, the sponsoring company.
<b>10412143 FABTECH Shop Practices, Introduction to (4 cr.)</b>	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, following MSHA and OSHA regulations. Students will learn basic first aid and become familiar with shop operations. This course is part of a training program called FABTECH, which is developed specifically for Fabick Cat, and participants are subject to screening by Fabick Cat, the sponsoring company.
<b>10412144 FABTECH Electrical Power Generation 1A (2 cr.)</b>	Focuses on understanding the operation and maintenance required for servicing electrical power generation equipment. It provides in-depth study and hands-on activities, including maintaining and repairing generator sets. Participants will learn how to test for proper operation and make appropriate adjustments. Topics include electrical safety and basic generator operation. This is Part 1 of a 2-part course and is part of a training program called FABTECH, which is developed specifically for Fabick Cat. Participants are subject to screening by Fabick Cat the sponsoring company.

## Course Descriptions

<b>10412145 FABTECH Hydraulic Systems 2 (5 cr.)</b>	Focuses on the skills needed to diagnose, service and repair hydraulic systems found on off-road construction equipment. Students will learn how to diagnose pumps, valves, cylinders, motors and electronic controlled valves. This course is part of a training program called FABTECH, which is developed specifically for Fabick Cat, and participants are subject to screening by Fabick Cat, the sponsoring company.
<b>10412146 FABTECH Construction Drive Train 1 (5 cr.)</b>	Focuses on the operation and maintenance of the power train. Students learn the procedures for overhauling, adjusting and troubleshooting heavy duty transmissions and various final drives. This course is part of a training program called FABTECH, which is developed specifically for Fabick Cat, and participants are subject to screening by Fabick Cat, the sponsoring company.
<b>10412147 FABTECH Construction Drive Train 2 (4 cr.)</b>	Focuses on failure analysis to determine root cause of various drive train system failures. Students will learn how to interpret codes used to identify errors within different power train computer controlled systems. This course is part of a training program called FABTECH, which is developed specifically for Fabick Cat, and participants are subject to screening by Fabick Cat, the sponsoring company.
<b>10412148 FABTECH Engine Rebuilding (5 cr.)</b>	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.
<b>10412149 FABTECH Electrical Power Generation 1B (3 cr.)</b>	Focuses on understanding the operation and maintenance required for electrical power generation equipment. It provides in-depth study and hands-on activities, including, troubleshooting, adjusting, and repairing generator sets. Participants will learn how to test for proper operation and make appropriate adjustments. Topics include electrical safety, basic generator operation, control panels, circuit breakers and voltage regulators. This is Part 2 of a 2-part course and is part of a training program called FABTECH, which is developed specifically for Fabick Cat. Participants are subject to screening by Fabick Cat the sponsoring company.
<b>10412150 FABTECH Engine Testing &amp; Diagnostics (5 cr.)</b>	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 testing situations. Engine operation will also be part of this course.

## Course Descriptions

<b>10412151 FABTECH Electrical 1 (5 cr.)</b>	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 various Caterpillar machines. This course is part of a training program called FABTECH, which is developed specifically for Fabick Cat, and participants are subject to screening by Fabick Cat, the sponsoring company.
<b>10412152 FABTECH Construction Drive Train 1A (2 cr.)</b>	Focuses on the operation and maintenance of the power train. Students learn the procedures for maintaining and overhauling heavy duty transmissions. This is Part 1 of a 2-part course and is part of a training program called FABTECH, which is developed specifically for Fabick Cat. Participants are subject to screening by Fabick Cat the sponsoring company.
<b>10412153 FABTECH Construction Drive Train 1B (3 cr.)</b>	Focuses on the operation and maintenance of the power train. Students learn the procedures for adjusting and troubleshooting heavy duty transmissions and various final drives. This is Part 2 of a 2-part course and is part of a training program called FABTECH, which is developed specifically for Fabick Cat. Participants are subject to screening by Fabick Cat the sponsoring company.
<b>10412154 FABTECH Electrical Power Generation 1 (5 cr.)</b>	Focuses on understanding the operation and maintenance required for electrical power generation equipment. It provides in-depth study and hands-on activities, including maintaining, troubleshooting, and repairing generator sets. Participants will learn how to test for proper operation and make appropriate adjustments. Topics include control panels, circuit breakers and voltage regulators.
<b>10412155 FABTECH Electrical Power Generation 2 (4 cr.)</b>	Focuses on the advanced skills needed to setup, troubleshoot, diagnose, and repair electrical power generation systems in accordance with Caterpillar guidelines. Students will learn these skills on Caterpillar electrical equipment that includes generators, switchgear, and control panels. This course is part of a training program called FABTECH, which is developed specifically for Fabick Cat, and participants are subject to screening by Fabick Cat, the sponsoring company.
<b>10412156 FABTECH Advanced Caterpillar Machine Applications (1 cr.)</b>	Enhance skills in the service of Caterpillar machines and other CAT allied equipment. The course is based on scenarios that encourage active, hands-on participation through learning stations where students will practice essential skills individually, as part of a team, and as team leader. Realistic simulations reinforce key concepts. Must be enrolled in a FABTECH Caterpillar service technician certificate track.
<b>10412157 FABTECH Fuel Systems 2 (4 cr.)</b>	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.

## Course Descriptions

<b>10412164 FABTECH Hydraulic Systems 1 (3 cr.)</b>	Focuses on basic hydraulic principles and systems. Hands-on activities include replacing hoses, cylinders and performing minor maintenance on hydraulic pumps and motors. This course is part of a training program called FABTECH, which is developed specifically for Fabick Cat, and participants are subject to screening by Fabick Cat, the sponsoring company.
<b>10412172 FABTECH Fuel Systems 1 (3 cr.)</b>	Introduces the student to the various fuel systems and teaches the fundamentals needed by a technician to properly diagnose and repair complex fuel systems installed in various Caterpillar machines.
<b>10412177 HD Diesel Electrical 1-Bridge (1 cr.)</b>	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. Students will learn about heavy duty truck electrical systems that were not covered in the automotive program.
<b>10412180 Introduction to Diesel Technology on Campus (3 cr.)</b>	Introduces the diesel shop environment and emphasizes shop safety and general shop practices. Introduces over the road commercial motor vehicle preventative maintenance practices and prepares students for success in the core diesel program classes.
<b>10412181 Introduction to Diesel Technology Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on shop safety, general shop practices, and vehicle preventive maintenance.
<b>10412182 HD Diesel Steering &amp; Suspension On Campus (3 cr.)</b>	Covers maintenance, repair, and minor diagnostics practices of heavy duty steering & suspension systems used on over the road commercial motor vehicles.
<b>10412183 HD Diesel Steering &amp; Suspension Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on maintenance, repair, and minor diagnostics of heavy duty steering & suspension systems used on over the road commercial motor vehicles.
<b>10412184 Heavy Duty Diesel Engine Maintenance On Campus (3 cr.)</b>	Covers maintenance, repair, and minor diagnostics practices on heavy duty diesel engines used in over the road commercial motor vehicles.
<b>10412185 Heavy Duty Diesel Engine Maintenance Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on maintenance, repair, and minor diagnostics on heavy duty diesel engines used in over the road commercial motor vehicles.
<b>10412186 Heavy Duty Diesel HVAC &amp; Cab Systems On Campus (3 cr.)</b>	Covers maintenance, repair, and minor diagnostics practices on heating, ventilation, and air conditioning systems used in heavy duty over the road commercial motor vehicles. Students learn maintenance and repair practices for cab components used on over the road commercial motor vehicles, and prepare for the Federal EPA 609 certification test.

## Course Descriptions

<b>10412187 Heavy Duty Diesel HVAC &amp; Cab Systems Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on maintenance, repair, and minor diagnostics on heating, ventilation, and air conditioning systems used in heavy duty over the road commercial motor vehicles. Provides Students work experience to maintain and repair cab components used on over the road commercial motor vehicles.
<b>10412188 Heavy Duty Diesel Drivetrains On Campus (3 cr.)</b>	Covers maintenance, repair, and minor diagnostics practices on drivetrains used in heavy duty over the road commercial motor vehicles.
<b>10412189 Heavy Duty Diesel Drivetrains Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on maintenance, repair, and minor diagnostics on drivetrains used in heavy duty over the road commercial motor vehicles. Students gain work experience servicing clutches, transmissions, differentials, drivelines, and wheel ends used on over the road commercial motor vehicles.
<b>10412190 Heavy Duty Diesel Air &amp; Hydraulic Brakes On Campus (3 cr.)</b>	Covers maintenance, repair, and minor diagnostics practices on air and hydraulic brake system used on over the road commercial motor vehicles.
<b>10412191 Heavy Duty Diesel Air &amp; Hydraulic Brakes Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on maintenance, repair, and minor diagnostics on air and hydraulic brake system used on over the road commercial motor vehicles.
<b>10412192 Heavy Duty Diesel Foundation Brakes On Campus (3 cr.)</b>	Covers maintenance, repair, and minor diagnostics practices on foundation brake systems used on over the road commercial motor vehicles.
<b>10412193 Heavy Duty Diesel Foundation Brakes Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on maintenance, repair, and minor diagnostics on foundation brake systems used on over the road commercial motor vehicles.
<b>10412194 Heavy Duty Diesel Electrical Systems On Campus (3 cr.)</b>	Covers maintenance, repair, and minor diagnostics practices on vehicle electrical system components used on over the road commercial motor vehicles.
<b>10412195 Heavy Duty Diesel Electrical Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on maintenance, repair, and minor diagnostics on vehicle electrical system components used on over the road commercial motor vehicles.
<b>413 - Electricity</b>	
<b>10413120 NEC Dwelling Units 1 (1 cr.)</b>	Examines the use and application of state and national electrical codes as they pertain to one- and two-family dwelling units. Students will focus on building code related to electrical installations, conductor types and uses, required outlet locations, required HFCI and GFCI outlets as they relate to residential installations. It is recommended that the student be active in the electrical trade.

## Course Descriptions

<b>10413121 NEC Dwelling Units 2 (1 cr.)</b>	Continues the examination of uses and application of state and national electrical codes as they pertain to one and two family dwelling units. Students will focus on standard and optional load calculations, grounding, and service installations as they relate to residential installations. It is recommended the student be active in the electrical trade.
<b>30413301 Electricity - Residential 1 (2 cr.)</b>	Introduces the students to Electrical Safety, Ohm's Law, the National and State Electrical Code, how to calculate voltage drop, use and install various electrical devices such as wall outlet boxes, switches, and the proper way to install a GFCI. The students will also learn how to calculate general lighting loads, determine how many wires are allowed in a box and how to bond wiring devices to the outlet box.
<b>30413302 Electricity - Residential 2 (2 cr.)</b>	Is a step-by-step approach to series and parallel circuits, electrical measurements with a voltmeter and ammeter, and goes into more depth in covering split circuit receptacles, multi-wire circuits, three wire branch circuits, and the installation of multi-outlet assemblies. Overhead services, service drop and underground service is also covered in this course.
<b>30413303 Electricity - Commercial 1 (2 cr.)</b>	Covers the introduction of magnetism, polarity, Lenz's law and the difference between direct and alternating current. Electrical symbols that are used on construction drawing are covered, along with minimum lighting requirement, receptacle and equipment loads for a given area. The student also learns the operation of fuses and circuit breakers.
<b>30413304 Electricity - Commercial 2 (2 cr.)</b>	Introduces inductance and inductive reactance, along with the relationship of voltage and current. The student will also learn how to install raceways, multi-outlet assemblies, floor outlets, how to control a sump pump and determine the correct over current protection for a panel board. The student will also be introduced to single phase motors and also apply electrical symbols and line diagrams.
<b>30413305 Electricity - Industrial 1 (2 cr.)</b>	Is a step-by-step approach to the operation of AC/DC magnetic contactors and motor starters, the operation of time delays and logic, along with control devices. The students will also learn the benefits of using busways, how to install busways, the installation of motors, transformers, and three phase motors.
<b>30413306 Electricity - Industrial 2 (2 cr.)</b>	Introduces the students to programmable controllers, types of panel boards, the electrical needs for air conditioning, and the requirements for protection of a building. Lighting safety rules will be covered along with direct current motors and the installation of direct current motors.

## Course Descriptions

<b>30413307 Electricity - Code 1 (2 cr.)</b>	Covers the steps for NEC proposals and how to identify NEC editorial symbols. Time will be spent on how to calculate proper raceway and box sizes, how to determine raceway and box locations, equipment clearances, and transformer installation requirements as it pertains to the NEC. The students will also understand the code requirements for hazardous locations along with pool and hot tub wiring.
<b>30413308 Electricity - Code 2 (2 cr.)</b>	Gives the understanding of grounding and how bonded parts can protect against electric shock. The students will learn what a bonding jumper is, what an isolated system looks like, why enclosures and other equipment are grounded, and how a ground fault protection device works.
<b>31413301 Residential 1 (3 cr.)</b>	Introduces students to residential wiring methods that includes practical application and hands-on experience in implementing safety, tool usage, and NEC code requirements.
<b>31413302 Residential 2 (3 cr.)</b>	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.
<b>31413303 Residential 3 (3 cr.)</b>	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.
<b>31413304 Residential 4 (3 cr.)</b>	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.
<b>31413305 Commercial 1 (3 cr.)</b>	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.
<b>31413306 Commercial 2 (3 cr.)</b>	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

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<b>31413307 Commercial 3 (3 cr.)</b>	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.
<b>31413308 Commercial 4 (3 cr.)</b>	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.
<b>31413309 Industrial 1 (3 cr.)</b>	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.
<b>31413310 Industrial 2 (3 cr.)</b>	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.
<b>31413318 Industrial 3 (3 cr.)</b>	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.
<b>31413322 National Electrical Code 2 (1 cr.)</b>	Continues the examination of uses and applications of the state and national electrical code as they pertain to electrical installations. Learners will focus on the general requirements of electrical installations, conductor types and use, general wiring methods and techniques as they relate to residential, commercial and industrial applications.
<b>31413325 National Electrical Code 3 (1 cr.)</b>	Continues the examination of uses and applications of state and national electrical code as they pertain to electrical installations. Learners will focus on the requirements of services, calculations, motors, transformers and special locations as they relate to residential, commercial and industrial applications.
<b>50413501 Maintenance Tech-Electrical Related 1 (2 cr.)</b>	Focuses on maintaining a safe work environment, basic math, physics.
<b>50413502 Maintenance Tech-Electrical Related 2 (2 cr.)</b>	Focuses on alternating current, print reading, and National Electrical Code.
<b>50413503 Maintenance Tech-Electrical Related 3 (2 cr.)</b>	Focuses on National Electrical Code and motor controls.
<b>50413504 Maintenance Tech-Electrical Related 4 (2 cr.)</b>	Focuses on electrical alternating and direct current motors and transformers.

## Course Descriptions

<b>50413507 Maintenance Tech-Electrical Related 5 (2 cr.)</b>	Focuses on solid state electronics and variable speed drives.
<b>50413508 Maintenance Tech-Electrical Related 6 (2 cr.)</b>	Focuses on PLC's (programmable logic controllers).
<b>50413521 Maintenance Electrician Related 1 (2 cr.)</b>	Introduces the learner to the Apprenticeship Program. Specific topics include basic electrical concepts, devices and circuits associated with direct current (DC) principles, electrical safety, circuit analysis, magnetism, meter use, and National Electrical Code.
<b>50413522 Maintenance Electrician Related 2 (2 cr.)</b>	Provides the apprentice with the basic fundamentals of motor control. The apprentice acquires skills in recognizing and drawing the basic symbols, the language of motor control, and how to apply these symbols into industrial applications. In addition, the apprentice draws and reads ladder and wiring diagrams, and applies this knowledge by wiring selected diagrams in a lab format.
<b>50413523 Maintenance Electrician Related 3 (2 cr.)</b>	Focuses on the basic concepts of alternating (AC). Students will learn AC circuit analysis, oscilloscope use, single phase and three phase power principles. National Electrical Code requirements for conductor use are also discussed.
<b>50413524 Maintenance Electrician Related 4 (2 cr.)</b>	Provides the apprentice with the advanced applications of motor control. The apprentice acquires skills in advanced logic of motor control, applying this logic to correctly interpret, design and wire control circuits. Apprentices wire pneumatic and solid state timing circuits for control of two motors, and forward/reversing circuits in an industrial lab environment.
<b>50413525 Maintenance Electrician Related 5 (2 cr.)</b>	Provides the learner with a more in-depth study of the National Electrical Code requirements pertaining to general electrical installations, grounding, branch circuits, feeders, and motor circuits. AC motor theory, operation and connections are also included.
<b>50413526 Maintenance Electrician Related 6 (2 cr.)</b>	Provides the apprentice with basic concepts and knowledge in Programmable Logic Controllers. The apprentice acquires knowledge of basic hardware and software of Programmable Logic Controllers and skills in programming technique of various Allen Bradley software packages as used in industry.
<b>50413527 Maintenance Electrician Related 7 (2 cr.)</b>	Prepares the learner to apply solid state fundamentals including diodes, rectifiers, power supplies, transistors and SCR's. Students will also learn transformer theory, connections, and National Electrical Code installation requirements.

## Course Descriptions

**50413528 Maintenance Electrician  
Related 8 (2 cr.)**

Provides the apprentice with basic concepts and knowledge in DC Variable Speed Drives. The apprentice acquires the skills and knowledge to install, program, maintain, and troubleshoot an analog and digital DC Drive system. The apprentice applies knowledge of communication, peripherals, and feedback devices to operate these drives in a lab environment.

**50413529 Maintenance Electrician  
Related 9 (2 cr.)**

Provides the apprentice with advanced concepts and knowledge in programmable logic controllers and photoelectric sensing devices. The apprentice acquires skills in advanced programming, troubleshooting, and maintaining programmable logic controllers and photoelectric sensing applications as used in industry.

**50413530 Maintenance Electrician  
Related 10 (2 cr.)**

Provides the learner with the basic concepts of AC Variable Speed Drives. The student will acquire the skills to install, program, maintain and troubleshoot a drive system.

**50413766 Fluid Power Systems for  
Industrial Electricians - Pneumatics (1  
cr.)**

Relates the basics of pneumatic theory and pneumatic components. Reviews safety and the interrelationship between pneumatic power with electrical control are emphasized.

**50413767 Fluid Power Systems for Ind  
Elec Hydraulics (1 cr.)**

Relates the basics of hydraulic theory and hydraulic components. Reviews safety and the interrelationship between hydraulic power with electrical control are emphasized.

**50413781 Intro Electrical Theory/DC  
Safety (2 cr.)**

Introduces the apprentice to the trade, electrical codes and safety. In addition, DC theory is applied to electrical circuits, devices, and components. DC circuit calculations help develop trade math skills. This course aligns with the first half of the NCCER level 1 curriculum for construction electricians.

**50413782 Wiring, Blueprint Reading, Intro  
NEC (2 cr.)**

Explores electrical codes, safety and AC theory. In addition, basic wiring principles and print reading are introduced to help build trade skills for ABC electrician apprentices. Use of test equipment used by the trade is included. This course aligns with the second half of the NCCER level 1 curriculum for construction electricians.

**50413783 Electric, Motor, Conduit, Light  
(2 cr.)**

Reviews AC electrical theory, circuits and devices. Apprentices will also examine basic lighting systems, and develop skills bending and fabricating conduit. Course includes an introduction to motors and motor installations. Electrical safety work practices and codes are reinforced. The NCCER AC module in Level 2 will be used as review. This course aligns with the first half of the NCCER level 2 curriculum for construction electricians.

## Course Descriptions

### **50413784 Ground, Overcurrent, Terminate (2 cr.)**

Examines conductor terminations and splices, methods and practices for installing electrical devices, and applying NEC requirements to various installations. Apprentices will also be introduced to grounding and bonding, overcurrent protective devices, and cable trays. Electrical safety work practices and applicable electrical codes will be reinforced. This course aligns with the second half of the NCCER level 2 curriculum for construction electricians. In addition, an introduction to photovoltaic, wind, water, geothermal and other renewable energy applications will be explored.

### **50413785 Intermediate Wiring Applications (2 cr.)**

Addresses load calculations, conductor selection and sizing, lighting systems, intermediate wiring applications, and the NEC requirements and installation procedures for various types of electrical equipment. Electrical safety work practices and codes will be reinforced in this course. Equipment requirements for hazardous locations are discussed. This course aligns with the first half of the NCCER level 3 curriculum for construction electricians.

### **50413786 Motor Appl Controls, Installs (2 cr.)**

Examines selecting and wiring transformers, applying NEC requirements and installation requirements for commercial electrical services, and motor controls. Apprentices will also explore low voltage systems and components. Electrical safety work practices and codes are reinforced in this course. This course aligns with the second half of the NCCER level 3 curriculum for construction electricians.

### **50413787 Emergency & Security Systems (2 cr.)**

Examines back-up power equipment, special communication systems, wiring devices, and installation requirements for emergency and security systems. Apprentices will explore electric generators and energy storage, fire alarms, DACS systems and related equipment. Electrical safety work practices and codes are reinforced in this course. This course aligns with the first half of the NCCER level 4 curriculum for construction electricians.

### **50413788 Systems Controls (2 cr.)**

Examines advanced controls, including solid states, PLC hardware, starters, variable frequency drives and electrical equipment associated with system control. NEC requirements for HVAC, heat tracing, medium voltage equipment, and special occupancies are included. Apprentices will also have related motor operations to maintenance and replacement job tasks. This course aligns with the second half of the NCCER level 4 curriculum for construction electricians.

## **414 - Electronics Servicing**

## Course Descriptions

### **50414722 Troubleshooting Electronic Systems & Devices (1 cr.)**

Examines troubleshooting and repair of electronic systems & devices involved with electrical and instrumentation. Course learning outcomes include applying safety procedures when testing and troubleshooting electronic systems, analyzing the role and function of semiconductor components, testing semiconductor components, troubleshooting semiconductor applications, performing circuit repair, and applying predictive and preventative maintenance concepts to electronic systems and devices.

### **50414725 Introduction to Industrial Automated Systems (1 cr.)**

Introduces E&I apprentices to industrial automated equipment and systems. Learning outcomes will examine basic control loops, compare automated and robotic manufacturing systems, explore distributed and central control, examine various system layouts, apply controller concepts and communications, and discuss automated control system safety. Signaling systems and redundant systems are explored as well.

### **50414726 Instrumentation Basics for Process Control (2 cr.)**

Explores instrumentation basics involved in process control and relates these to job duties and tasks performed by E&I technicians. Course learning outcomes include safety, instrumentation basics, measurement, control, instrument calibration, control theories, using technical resources, and networking protocols.

### **50414727 Intro to Measurement and Process for E&I (2 cr.)**

Teaches apprentices to describe and explain the make-up of an automatic control loop, the function of each of the control loop elements and the terms used to describe the loop performance and characteristics and perform mathematical functions associated with offset math and apply the concepts to common signaling systems used in process control systems. Course will examine the principles, methods and devices used to measure flows, temperatures, pressures, levels, and densities in various industrial process applications. Course will explore common methods and types of equipment used to measure chemical components of a material or stream.

### **50414728 Applied Process Control for E&I (2 cr.)**

Explores the makeup of automatic control loops, and the role and function of control loop elements. Concepts related to common signaling systems used in process control systems will be examined. Course compares various methods of transmitting sensor signals and examines the principles associated with various types of control valves and accessories. Theories of distributed control systems and design considerations are included. A capstone project will be completed during this course to demonstrate mastery of skills learned throughout the entire apprenticeship.

## **419 - Indust. Hydraulics-Pneumatics**

## Course Descriptions

<b>50419506 Hydraulics - Mach Apprentice (1 cr.)</b>	Hydraulics - Mach Apprentice
<b>50419508 Maintenance Tech-Mechanical Related 7 (2 cr.)</b>	Provides an introduction to the theories involved in fluid power transmission and includes the relationships of flow and volume to speed of operation. Focuses on safety and operation of hydraulic and pneumatic equipment. Students will learn to read schematics and blueprints with the opportunity to build and test common circuits.
<b>50419510 Hydraulic and Pneumatic Theory (1 cr.)</b>	Is an introduction to the theories involved in fluid power transmission, including the relationships of flow and volume to speed of operation, and pressure and area to force. Emphasis is on the importance of reading and understanding fluid power symbols.
<b>50419511 Hydraulic and Pneumatic Circuits (1 cr.)</b>	Provides students the opportunity to build and test some of the common circuits used in industry using knowledge of symbology and fluid power theory learned in previous courses. An explanation of these circuit components is included in this course.
<b>50419512 Pneumatics Apprentice (1 cr.)</b>	Uses a combination of lecture and hands-on lab to explain some of the more common industrial uses for pneumatic systems. Correct air preparation and distribution as well as conservation of energy are stressed.
<b>420 - Machine Shop</b>	
<b>10420120 Metallurgy-Mechanical Design (1 cr.)</b>	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.
<b>31420301 Manufacturing Technician 1 (3 cr.)</b>	Provides an orientation to manufacturing, followed by the MSSC safety module, MSSC quality model, OSHA 10 certification, blueprint reading, visual inspection, measurement and first aid & CPR training. MSSC modules 1 & 2 are aligned with the learning plans for this course.
<b>31420302 Manufacturing Technician 2 (3 cr.)</b>	Introduces the MSSC manufacturing processes and production and maintenance awareness modules, along with communication, lean manufacturing, problem solving, and frontline leadership. MSSC modules 3 and 4 are aligned with the learning plans for this course.
<b>31420303 Math for Manufacturing (1 cr.)</b>	Provides applied mathematics instruction from a review of basic arithmetic and algebra.

## Course Descriptions

<b>31420304 Communication for Manufacturing (1 cr.)</b>	Introduces the basic communication concepts relating to the workplace to acquire the necessary skills of giving instructions, writing a technical memo, and explaining a technical process.
<b>32420301 Manual Machining Basics (3 cr.)</b>	Designed for individuals already working in the machining field. Provides 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. Introduces novice machinists or maintenance mechanics to the basic operations and safety practices associated with the manual milling machine and manual lathes.
<b>32420314 Manufacturing Techniques, Cold (1 cr.)</b>	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.
<b>32420331 Measurement &amp; Benchwork 1 (3 cr.)</b>	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.
<b>32420332 Measurement &amp; Benchwork 2 (3 cr.)</b>	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.
<b>32420333 Engine Lathe 1 (3 cr.)</b>	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.
<b>32420334 Engine Lathe 2 (3 cr.)</b>	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.
<b>32420335 Manual Milling Machines 1 (3 cr.)</b>	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.

## Course Descriptions

<b>32420336 Manual Milling Machines 2 (3 cr.)</b>	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.
<b>32420337 Manual Machine Tools, Adv. 1 (3 cr.)</b>	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.
<b>32420338 Manual Machine Tools, Adv. 2 (3 cr.)</b>	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.
<b>32420339 Grinding Processes 1 (3 cr.)</b>	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.
<b>32420341 CNC M/G Code 1 (3 cr.)</b>	Upgrades the skills of established machinists. Prepares students to become a higher level machine operator or machinist in an industrial plant.
<b>32420342 CNC M/G Code 2 (3 cr.)</b>	Continues to upgrade the skills of established machinists. Prepares students to become a higher level machine operator or machinist in an industrial plant.
<b>32420343 CNC, Advanced 1 (3 cr.)</b>	Upgrades the skills of established machinists. Prepares students to become a higher level machine operator or machinist in an industrial plant.
<b>32420344 CNC, Advanced 2 (3 cr.)</b>	Continues to upgrade the skills of established machinists. Prepares students to become a higher level machine operator or machinist in an industrial plant.
<b>32420345 CAM Programming &amp; Toolmaking 1 (3 cr.)</b>	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.
<b>32420346 CAM Programming &amp; Toolmaking 2 (3 cr.)</b>	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.
<b>32420350 Blueprint Reading, Basic-MTO (1 cr.)</b>	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.
<b>32420351 Metallurgy, MTO (1 cr.)</b>	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.

## Course Descriptions

<b>32420352 CAD/CAM-Machine Tool (2 cr.)</b>	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.
<b>32420353 Blueprint Reading, Adv-MTO (1 cr.)</b>	Covers advanced print reading including geometric dimensioning & tolerancing, welding, and assembly prints.
<b>32420354 Introduction to Numerical Control - MTO (3 cr.)</b>	Upgrades the skills of established machinists. Prepares students to become a higher level machine operator or machinist in an industrial plant.
<b>50420501 Machining Related 1 - Millwright (1 cr.)</b>	The student will get hands-on experience working with basic measuring tools and also hands-on operations in layout tools and procedures. Screw thread tools and terminology will also be covered, as well as calculating the proper speeds and feeds to utilize on machine tools. Safety will be covered for every aspect of the industrial setting which the student will be working in.
<b>50420502 Machining Related 2 - Millwright (1 cr.)</b>	Gain an understanding of and practical experience on drill presses, lathes, milling machines and basic surface grinding. Completion of Machining Related 1 is recommended.
<b>50420503 Machinery Handbook 1- Tables/Charts/Formulas (1 cr.)</b>	Teaches students how to use the Machinery's Handbook to solve problems found in the machine shop environment. Topics include class of fits, fasteners, feeds and speeds, etc.
<b>50420510 Industrial Mfg Technician Apprentice 1 (3 cr.)</b>	The first semester of related instruction includes an orientation to the trade and manufacturing, then followed by the MSSC safety module, MSSC quality module, OSHA 10 certification, blueprint reading, visual inspection, measurement and first aid & CPR training. Manufacturing concepts will be introduced and applied in a variety of manufacturing settings. MSSC modules 1 and 2 are aligned with the learning plans for this course along with the MATC course Machine Trades Math.
<b>50420512 Industrial Mfg Technician Apprentice 2 (3 cr.)</b>	The second semester of related instruction includes the MSSC manufacturing processes and production and maintenance awareness modules, along with communication, lean manufacturing, problem solving, and frontline leadership. Manufacturing related concepts will be applied to a variety of industrial setting. The course wraps-up with an examination of emerging trends and technologies, and future directions for manufacturing. MSSC learning objectives in modules 3 and 4 are aligned with the learning plans for this course. In addition, the MATC Communication for Apprentices course is included in the learning plans but will stand alone for registration and transcript purposes.
<b>50420514 Metal Heat Treat-Properties-Methods-Testing (1 cr.)</b>	Teaches students properties of different types of metals, heat-treatment of various materials, and testing processes of hardened materials.

## Course Descriptions

<b>50420516 Metrology/SPC (1 cr.)</b>	Covers the use of measurement tools, calipers and micrometers, bore gauges, etc. Basic statistical process control to include charting, bell curves and process capability studies are also studied.
<b>50420523 Jigs and Fixtures (1 cr.)</b>	Teaches students to understand the use of jigs and fixtures in the modern machine shop, as well as the cost of fixturing to the manufacturer.
<b>50420531 Machine Techniques 1, Lathes/Drilling (1 cr.)</b>	Provides students with a basic understanding of the metal working lathes and drill press's components, basic safety and operation, and speeds and feeds calculations.
<b>50420532 Machine Techniques 2, Power Saws/Milling (1 cr.)</b>	Provides students with a basic understanding of power saws and milling machines, types of cutting tools and cutting tool selection. Basic safety and operation, speeds and feeds calculations will be covered.
<b>50420533 Machine Techniques 3, Boring Mills/Planers (1 cr.)</b>	Provides students with a basic understanding of surface and cylindrical grinders and wheel selection.
<b>50420534 Cost Estimating (1 cr.)</b>	Teaches students to estimate the cost of machined parts to the manufacturer, job types, employability, management styles, and job routing.
<b>50420537 Carbide Machining/GD&amp;T (1 cr.)</b>	Incorporates an 8-hour Kennametal carbide machining seminar, covering insert selection, use of speeds and feeds, calculators, tool geometry and insert coatings. The course also includes 10 hours of instruction in geometric dimensioning and tolerance application of G.D.T. symbols on machine blueprints, to include tolerance of form, profile, location, orientation and runout.
<b>50420538 Intro to Numerical Control (1 cr.)</b>	Covers programming machine tools using EIA/ISO and G and M codes. Use of cutter compensation and canned machining cycles is also addressed.
<b>50420539 CNC Programming (1 cr.)</b>	Covers CNC conversational programming that will be done in assorted programming languages.
<b>50420540 CAD/CAM-36 Hr (1 cr.)</b>	Is an introduction to the basic concept of computer aided drafting and computer aided manufacturing.
<b>50420571 Machinist Math 1, Fractions and Decimals (1 cr.)</b>	Teaches students the use of fractions and decimals in the machine shop environment.
<b>50420572 Machinist Math 2, Basic Algebra (1 cr.)</b>	Teaches students to solve algebraic equations commonly used in the machining trade.
<b>50420573 Machinist Math 3, Basic Geometry (1 cr.)</b>	Teaches students to understand and apply basic geometry concepts and problems found in the machine tool trade.
<b>50420574 Machinist Math 4, Right-Hand Trigonometry (1 cr.)</b>	Teaches students to solve trig equations commonly used in the machine tool trade.
<b>50420711 Mathematics for the Machine Trades (1 cr.)</b>	Provides applied mathematics instruction from a review of basic arithmetic; basic algebra; applications, based on geometry; right triangle trigonometry, oblique angle trigonometry and compound angles.

## Course Descriptions

### **50420712 Oral & Written Comm for Machine Tool (1 cr.)**

Introduces the apprentice to basic communication concepts relating to the workplace. It is designed specifically for the apprentice to acquire the necessary skills of giving instructions, writing a technical memo, and explaining a technical process. Throughout the course the apprentice will brainstorm, write, edit, revise, and use one-on-one communication delivery in a small group. The course combines lecture and hands-on activities utilizing information which the apprentice brings from the workplace.

### **50420714 Engineering Drawings for Machine Trade Apprentices (1 cr.)**

Acquaint the apprentice with the interpretation of engineering prints and other technical and manufacturing documentation. The primary focus of the course will be on that part of manufacturing most closely related to machining and tooling. Background information is provided relative to the process used to create and finish the product or piece part on the prints being studied.

## **421 - Mechanical Drafting**

### **50421514 Blueprint Reading 1 - Machine Apprentice (1 cr.)**

Covers basic blueprint reading, third-angle orthographic projection, sectional views.

### **50421516 Blueprint Reading 2 - Machine Apprentice (1 cr.)**

Covers advanced blueprint reading, to include assembly prints, welding and gear prints.

## **423 - Millwright**

### **50423503 Millwright Related 1 (2 cr.)**

This course provides the millwright apprentice proficiency in mathematics, science, computers, and blueprint reading required for the development of skilled journeyworkers.

### **50423504 Millwright Related 2 (2 cr.)**

This course is a continuation of Millwright Related 1. Topics include math, science, and blueprint reading.

### **50423510 Millwright Related 7 (2 cr.)**

This course provides the millwright apprentice technical instruction on subjects that are pertinent to the development of skilled journeyworkers. This related information explains the why of the trade and addresses the theory of operation, installation, repair and maintenance of mechanical components and machines used in industrial and manufacturing operations.

### **50423512 Maintenance Tech-Mechanical Related 11 (1 cr.)**

Provides students with the understanding and application of preventive and predictive maintenance. Examines breakdown maintenance, scheduled maintenance, and predictive types of maintenance. Demonstrates the advantages as well as the disadvantages of these programs. The importance of managing documentation is also included.

## Course Descriptions

<b>50423513 Millwright Related 3 - 36 HR (1 cr.)</b>	This course provides the millwright apprentice with technical instruction on subjects that are pertinent to the development of skilled journeyworkers. This related information explains the why of the trade, and addresses the theory of operation, installation, repair and maintenance of mechanical components and machines used in industrial and manufacturing operations.
<b>50423514 Millwright Related 4 - 36 HR (1 cr.)</b>	This course provides the millwright apprentice with technical instruction on subjects that are pertinent to the development of skilled journeyworkers. This related information explains the why of the trade, and addresses the theory of operation, installation, repair and maintenance of mechanical components and machines used in industrial and manufacturing operations.
<b>50423515 Millwright Related 5 - 36 HR (1 cr.)</b>	This course provides the millwright apprentice with technical instruction on subjects that are pertinent to the development of skilled journeyworkers. This related information explains the why of the trade, and addresses the theory of operation, installation, repair and maintenance of mechanical components and machines used in industrial and manufacturing operations.
<b>50423516 Millwright Related 6 - 36 HR (1 cr.)</b>	This course provides the millwright apprentice with technical instruction on subjects that are pertinent to the development of skilled journeyworkers. This related information explains the why fo the trade, and addresses the theory of operation, installation, repair and maintenance of mechanical components and machines used in industrial and manufacturing operations.
<b>50423518 Millwright Related 8 - 72 HR (2 cr.)</b>	This course provides the millwright apprentice with technical instruction on subjects that are pertinent to the development of skilled journeyworkers. This related information explains the why of the trade, and addresses the theory of operation, installation, repair and maintenance of mechanical components and machines used in industrial and manufacturing operations.
<b>50423519 Millwright Related 9 (2 cr.)</b>	Provides an introduction to the principles of mechanical power transmission, bearings and belt drives. Students must have completed an apprenticeship in Pipefitter prior to taking this course.
<b>50423520 Millwright Related 10 (2 cr.)</b>	Provides related theory and hands-on lab instruction on chain drives, gears and rigging.
<b>50423530 Millwright Related 11 (2 cr.)</b>	Provides instruction in basic metallurgy, machine and equipment installation, and coupling alignment.
<b>50423531 Millwright Related 12 (2 cr.)</b>	Provides instruction on pumps and pumping systems and rotating equipment alignment.

## Course Descriptions

<b>50423535 Maintenance Tech-Mechanical Related 8 (2 cr.)</b>	Focuses on maintaining a safe work environment, print reading, mechanical power transmission, precision measurement, bearings and belts.
<b>50423536 Maintenance Tech-Mechanical Related 9 (2 cr.)</b>	Focuses on equipment installation, pumps and compressors, and alignment.
<b>50423539 Maintenance Tech-Mechanical Related 10 (2 cr.)</b>	Focuses on couplings, conveyors, gears and gear boxes, and gear assemblies.
<b>50423550 Maintenance Tech-Mechanical Related 12 (2 cr.)</b>	Focuses on proper installation and maintenance of pumps and compressors. Identify couplings and their applications, including alignment techniques and their related accuracy.
<b>50423717 Hydraulics for MMMP Trades (1 cr.)</b>	Analyzes inspecting, servicing, and troubleshooting hydraulic systems and components. Apprentices will learn safety related issues and be taught proper safety procedures for working with hydraulic systems and components.
<b>50423718 Pneumatics &amp; Compressed Air for MMMP Trades (1 cr.)</b>	Provides instruction to apprentices concerning many aspects of inspecting, servicing, and troubleshooting pneumatic systems and components. Apprentices will learn safety related issues and be taught proper safety procedures for working with pneumatic systems and components.
<b>50423720 Pipefitting and Valves for MMMP Trades (1 cr.)</b>	Introduces apprentices to pipe sizes, materials and schedules, examines fittings, tubing and valves, and develops skills related to layout, installation, and maintenance.
<b>50423722 Packings, Seals, Gaskets for MMMP Trades (1 cr.)</b>	Examines packing, seals, and gaskets and compares materials and applications. Then skills in layout, cutting, inspecting, removing, and installing these components will be developed. This course was the former C-13 module for the MMMP apprenticeship program.
<b>50423723 SDS &amp; Adhesives and Sealants for MMMP Trades (0 cr.)</b>	Examines different adhesive and sealant types and their applications. Apprentices will learn how to apply adhesives to a repair, apply sealants for repair. Examine MSDS safety information for common industrial fluids.
<b>50423724 Preventive and Predictive Maintenance for MMMP (1 cr.)</b>	Examines both preventative and predictive maintenance concepts as they apply to millwright work processes and machine maintenance. Apprentices will develop skills related to assessing machine conditions and faults based on both preventative and predictive maintenance.
<b>50423730 Bearings for the MMMP Trades (1 cr.)</b>	Examines bearing types and applications, and compares equipment bearings. Then learners will develop skills related to bearing inspection, selection, removal, mounting, lubrication and diagnosing bearing failures.
<b>50423731 Couplings &amp; Alignment for the MMMP Trades (1 cr.)</b>	Compares different coupling types and examines common misalignment problems. Apprentices will develop skills related to inspecting, troubleshooting, and preparing couplings for removal and installation, and also aligning and lubricating couplings.

## Course Descriptions

<b>50423732 Pumps for the MMMP Trades (1 cr.)</b>	Compares different pump types and their applications. Apprentices will complete a field inspection of pumps and learn how to troubleshoot, remove, overhaul, install and perform preventative maintenance on pumps.
<b>50423733 Belts, Sheaves, Pulleys, and Drives (1 cr.)</b>	Compares different belt types and drive components. Apprentices will develop skills related to inspecting, troubleshooting, removing, selecting, and installing belt drive systems.
<b>50423734 Gears, Gearboxes, Gear Assemblies (1 cr.)</b>	Compares gear types and applications. Apprentices will develop skills inspecting gear assemblies, troubleshooting gear problems, removing gears and components, and reassembling gear drive systems.
<b>50423735 Mechanical Power Transmission (1 cr.)</b>	Examines drive transmission systems and their applications, including roller chains. Apprentices will develop skills inspecting power transmission systems and troubleshooting mechanical drive systems.
<b>50423736 Conveyors for the MMMP Trades (0 cr.)</b>	Examines chain, belt, and other types of conveyors and related components.
<b>50423760 Lubrication Fundamentals for Apprentices (2 cr.)</b>	Includes interpreting oil test analyses, examining automated lubrication technologies, exploring ultrasound testing, comparing filtration technologies and exploring other fundamental concepts involved in lubrication technologies. Course is intended for apprentices enrolled in related instruction, and the fundamental concepts presented in this course will be applied to industrial equipment and machines and trade work practices.
<b>427 - Plumbing</b>	
<b>50427751 Sanitary Drains 1 (2 cr.)</b>	Plumbing related instruction of sanitary drain systems. Course includes a review of codes and trade practices related to sanitary drains, drainage systems, components and applications.
<b>50427752 Vents and Venting Systems (2 cr.)</b>	This course is designed to provide the apprentice with the skills to identify and design sanitary vent piping in a plumbing system in accordance with the Wisconsin Plumbing Code. The course focuses on theory, work experience, and the application of plumbing code principles through discussions, drawing exercises, work sheets, and evaluations.

## Course Descriptions

- 50427753 Water Distribution 1 (2 cr.)** This course provides the apprentice with the skills to identify, design, install and service various applications for water supply systems that are listed in plumbing codes. Apprentices will use the code language and tables in various plumbing systems in accordance with the Wisconsin Plumbing Code. Course topics will include commercial to single family and private well systems. The course focuses on theory, work experience, and the application of plumbing code principles through discussions, drawing exercises, work sheets, and evaluations.
- 50427754 Water Distribution 2 (2 cr.)** This course provides the apprentice with the skills to identify, design, install and service cross connection controls, water treatment equipment and multi-purpose piping systems in various plumbing systems in accordance with the Wisconsin Plumbing Code. The course focuses on theory, work experience, and the application of plumbing code principles through discussions, drawing exercises, work sheets, and evaluations.
- 50427755 Sanitary Drains 2 (2 cr.)** This course provides the apprentice with the skills to identify, design, install and service various applications for storm water, clear water, and drainage systems. Apprentices will use the code language and tables in various plumbing systems in accordance with the Wisconsin Plumbing Code. The course focuses on theory, work experience, and the application of plumbing code principles through discussions, drawing exercises, work sheets, and evaluations.
- 50427756 Private Onsite Wastewater Treatment Systems (POWTS) (2 cr.)** This course provides the apprentice with the skills to identify, design, install and service various applications for private onsite wastewater treatment systems that are listed in plumbing codes or individual component manuals. Apprentices will use the code language and tables in various plumbing systems in accordance with the Wisconsin Plumbing Code. Other topics will include pretreatment, soil evaluation, site planning and new technologies. The course focuses on theory, work experience, and the application of plumbing code principles through discussions, work sheets, and evaluations.
- 50427757 Green Plumbing Applications (2 cr.)** This course provides plumbing apprentices with an introduction to green applications and prepares students to take certification exams.

## Course Descriptions

### **50427758 Plumbing Advanced Topics/TSA (2 cr.)**

This course provides the apprentice with the opportunity to select and complete an applied plumbing project in collaboration with the instructor. Projects will apply the skills required to identify, design, install and service various plumbing applications that are listed in plumbing codes. Apprentices will use the code language and tables in various plumbing systems in accordance with the Wisconsin Plumbing Code. The course builds upon the theory, work experience, and the application of plumbing code principles addressed in previous coursework to support completing an applied hands-on project.

### **435 - Steamfitting**

#### **50435502 Pipefitter Related 2 (2 cr.)**

Consists of trigonometry and related science as it pertains to the field of pipefitting. Science of matter, properties of solids, properties of liquids, properties of gases, work energy power, temperature and heat effects, and change of state are explored. Labs and related hands-on projects are also included.

#### **50435503 Pipefitter Related 3 (2 cr.)**

Consists of multiview drawings, Isometric drawings, and process pipe drawings. Also covered in process piping are definitions, rolling offsets, and solving parallel offsets. Layout of pipe intersections and uneven angles are studied. Labs and related hands-on projects are also included.

#### **50435504 Pipefitter Related 4 (2 cr.)**

Consists of steam concepts, steam trapping, boiler accessories, pressure reducing stations, steam piping, and high and low pressure boilers. Trigonometry concepts are reviewed and discussed. Labs and related hands-on projects are also included.

#### **50435506 Pipefitter Related 6 (2 cr.)**

Covers chemical handling as it relates to the paper industry and local manufacturing in this area. Template development through the use of the Layout w/1000 Ordinate book is practiced. Pipefitter related web sites are also explored to enhance the skill level of the trainee. An introduction to pneumatics and the laws they apply are reviewed and discussed. Labs and related hands-on projects are also included.

#### **50435507 Pipefitter Related 7 (1 cr.)**

Covers an introduction to fluid-power Systems. Compares and contrast hydraulic systems to pneumatic systems. Discusses the advantages and disadvantages of both hydraulic and pneumatic systems. Topics covered include safety and health, standards and symbols, hydraulic fluid, hydraulic power sources, fluid storage and distribution, actuators, and system control. Labs and related hands-on projects are also included.

#### **50435508 Pipefitter Related 8 (1 cr.)**

Covers hydraulic systems. Topics include accumulators, conditioning system fluid, and applying hydraulic power. Labs and hands-on related projects are also included.

## Course Descriptions

<b>50435511 Pipefitter Related 1 (2 cr.)</b>	Consists of an introduction to the trade that explains the paid related requirements and protocol of attending school. Basic drafting techniques are covered, as well as an introduction to Orthographic Projections. Mathematics are covered, as well as an introduction to trigonometry. Labs and related hands-on projects are also included.
<b>50435512 Steamfitter Related 2 (2 cr.)</b>	Steamfitter Related 2
<b>50435513 Steamfitter Related 3 (2 cr.)</b>	Steamfitter Related 3
<b>50435514 Steamfitter Related 4 (2 cr.)</b>	Steamfitter Related 4
<b>50435515 Steamfitter Related 5 (2 cr.)</b>	Steamfitter Related 5
<b>50435517 Steamfitter Related 7 (2 cr.)</b>	Steamfitter Related 7
<b>50435518 Steamfitter Related 8 (2 cr.)</b>	Steamfitter Related 8
<b>50435519 Steamfitter Related 1 (2 cr.)</b>	This course will cover basic mathematics, blueprint reading and fluid flow physics, as they relate to the steamfitter trade.
<b>50435520 Steamfitter Related 6 (2 cr.)</b>	This course will cover steam heating processes, process steam, advanced pipe math, and advanced blueprint reading and isometric drawing.
<b>50435521 Steamfitter Service Related 1 (2 cr.)</b>	Steamfitter Service Related 1
<b>50435522 Steamfitter Service Related 2 (2 cr.)</b>	Steamfitter Service Related 2
<b>50435523 Steamfitter Service Related 3 (2 cr.)</b>	Steamfitter Service Related 3
<b>50435524 Steamfitter Service Related 4 (2 cr.)</b>	Steamfitter Service Related 4
<b>50435525 Steamfitter Service Related 5 (2 cr.)</b>	Steamfitter Service Related 5
<b>50435526 Steamfitter Service Related 6 (2 cr.)</b>	Steamfitter Service Related 6
<b>50435527 Steamfitter Service Related 7 (2 cr.)</b>	Steamfitter Service Related 7
<b>50435528 Steamfitter Service Related 8 (2 cr.)</b>	Steamfitter Service Related 8
<b>50435535 Pipefitter Related 5 (2 cr.)</b>	Consists of the study of various valves and their functions and applications. Also covered in this section is the science of metallurgy and its application to the trade. Rigging is covered, as well as rigging safety and its application to the trade. Pipe insulation and the purpose and applications are discussed and studied.
<b>50435540 Pipefitter Related 9 (2 cr.)</b>	Covers pipefitter math, process piping and drafting, and IPT pipe trades. Students must have completed an apprenticeship in Millwright prior to taking this course.
<b>50435541 Pipefitter Related 10 (2 cr.)</b>	Covers pipefitter math, process piping, drafting and pipe trade information.
<b>50435542 Pipefitter Related 11 (2 cr.)</b>	Covers HVAC fundamentals such as steam, steam heat and hot water heat. It also covers steam traps.

## Course Descriptions

**50435543 Pipefitter Related 12 (2 cr.)**

Covers welding, burning and plasma cutting, template development and fasteners.

### **439 - Tool and Die Making**

**50439550 Tool/Die Applications, Design/Research (2 cr.)**

Teaches Tool & Die apprentices to design from concept a working stamping die set using AutoCAD and MasterCAM software systems to create blueprints and tool paths for part generation. Fundamentals of mold making, patterning, and stamping will also be covered.

**50439551 Tool/Die Applications, Tool Assembly (2 cr.)**

Provides Tool & Die Apprentices the opportunity to produce the product designed by them in design research class using CNC machines, manual machines, and wire E.D.M. machine. They will assemble and test the product.

### **442 - Welding**

**10442103 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.

**10442110 Welding, Metal Sculptures (1 cr.)**

Covers safety and basic welding fundamentals in SMAW, stick electrode and GMAW, wire welding. Various welding techniques will be taught in creating a metal sculpture. The basic supply list includes safety glasses, skull cap, and welding gloves.

**10442111 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.

**10442120 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.

**10442121 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.

## Course Descriptions

<b>10442123 GMAW Techniques 1 (2 cr.)</b>	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.
<b>10442124 GMAW Techniques 2 (2 cr.)</b>	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.
<b>10442125 FCAW Techniques (2 cr.)</b>	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.
<b>10442126 GTAW Techniques (2 cr.)</b>	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.
<b>10442127 Robotic Arc Welding, Basic (2 cr.)</b>	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.
<b>10442128 Pipe Welding Techniques (2 cr.)</b>	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.
<b>31442319 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442337 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442338 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442339 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442348 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.

## Course Descriptions

<b>31442349 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442356 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442366 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442367 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442368 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442369 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442386 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442387 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442388 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442389 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442392 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442394 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442398 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31442399 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>32442301 Basic Welding for Machine Tool Operation (1 cr.)</b>	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.
<b>32442317 Aircraft Applied Welding (1 cr.)</b>	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.
<b>50442502 Welding-Machinist Apprentice (1 cr.)</b>	Introduces the student to the Gas Metal Arc Welding and the Gas Tungsten Arc Welding processes. Safety, power source setup and material selection are covered.
<b>50442507 Welding Processes for Apprenticeships 1 (1 cr.)</b>	Focuses on the basic concepts of Shielded Metal Arc Welding, 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 labs with proficiency. Troubleshooting, along with specific job applications will be covered with these welding processes.

## Course Descriptions

### **50442508 Welding Processes for Apprenticeships 2 (1 cr.)**

Focuses on the basic concepts of Shielded Metal Arc Welding, 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 labs with proficiency. Troubleshooting, along with specific job applications will be covered with these welding processes.

### **50442542 Apprenticeship Related Welding (1 cr.)**

Focuses on the basic concepts of Shielded Metal Arc Welding, 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 labs with proficiency. Troubleshooting, along with specific job applications will be covered with these welding processes.

### **50442551 Pipe Fabricator Related 1 (2 cr.)**

Provides the apprentice with math, algebra and trigonometry knowledge and develops skills in fittings, pipe and valve welding in flat, horizontal, vertical and overhead positions.

### **50442552 Pipe Fabricator Related 2 (2 cr.)**

Provides the apprentice with math, algebra and trigonometry knowledge and develops skills in fittings, pipe and valve welding in all positions.

### **50442553 Pipe Fabricator Related 3 (2 cr.)**

Provides the apprentice with math, algebra and trigonometry knowledge, and develops skills in fittings, pipe and valve welding in all welding positions.

### **50442554 Pipe Fabricator Related 4 (2 cr.)**

Provides the apprentice with math, algebra and trigonometry knowledge and develops skills in fittings, pipe and valve welding in all welding positions.

### **50442555 Pipe Fabricator Related 5 (2 cr.)**

Provides the apprentice with math, algebra and trigonometry knowledge and develops skills in fittings, pipes and valve welding in all welding positions.

### **50442556 Pipe Fabricator Related 6 (2 cr.)**

Provides the apprentice with math, algebra and trigonometry knowledge and develops skills in fittings, pipe and valve welding in all positions.

### **50442557 Pipe Fabricator Related 7 (2 cr.)**

Provides the apprentice with layout and takeoff knowledge and advanced welding and certification skills.

### **50442558 Pipe Fabricator Related 8 (2 cr.)**

Provides the apprentice with layout and takeoff knowledge and advanced welding and certification skills.

## **447 - Operating Engineer**

### **50447500 Advanced Grade-Rover Topcon (1 cr.)**

Trains exclusively on the corresponding Topcon equipped rovers. Training will revolve around the data collector and the different ways to lay out projects and record data. The course will utilize Topcon 3-D Office.

### **50447501 Advanced Grade-Rover Trimble (1 cr.)**

Trains exclusively on the corresponding Trimble equipped rovers. Training will revolve around the data collector and the different ways to lay out projects and record data. The course will utilize Trimble Office Synchronizer and SCS Report Utility.

## Course Descriptions

<b>50447502 Beginner-Business Center (1 cr.)</b>	Designed for the experienced GNSS rover or machine control operator to help identify work flow in Trimble Business Center HCE version 4.12. Instruction will utilize the unlicensed program to import and export data. Trainees will be exposed to data management and basic model building.
<b>50447503 Advanced-Business Center (1 cr.)</b>	Designed for trainees that have taken the beginner Trimble Business Center HCE course and are looking to advance their skills using Trimble Business Center. This course utilizes the latest licensed version of Trimble Business Center with full functionality.
<b>50447504 Op Eng Dozer-40hrs (1 cr.)</b>	Instructs students on the smaller finish dozers. They will learn how to work around obstacles like culverts, manholes, etc. They will be instructed how to work on slopes using the newest technology in automated grading systems. Students will work on the developing of skills to be a finish operator.
<b>50447505 Material Crushing (1 cr.)</b>	Exposure to the basic operations of a portable impact crusher and how to perform crushing operations safely. You will also be trained on setup, troubleshooting, and maintenance of the crusher.
<b>50447506 Advanced Operations (1 cr.)</b>	Introduction to more advanced operations in the field including two crane lifts, multi-hoist operations, rigging and pick and carry operations. Advanced operations will be offered to operators with previous crane experience. Students will need to choose Telescopic or Lattice.
<b>50447507 Op Eng Motor Grader-40hrs (1 cr.)</b>	Instructs students on working with the newest automated control systems and working with finish graders.
<b>50447508 Intro to Hydrovacing (1 cr.)</b>	Provides comprehensive training on truck components, safety protocols, and field operations. Participants gain in-depth knowledge of Hydrovac equipment, including its mechanical systems and proper maintenance practices. The course emphasizes workplace safety, covering hazard identification, protective measures, and regulatory compliance. Hands-on field training ensures attendees are prepared to operate Hydrovac trucks efficiently and safely in various excavation projects.
<b>50447509 Adv Elect/Hyd Troubleshooting - 40hr (1 cr.)</b>	Covers comprehensive techniques for troubleshooting modern control systems on later model equipment such as components, schematics, digital multimeter use and applied theory.
<b>50447510 Op Eng-Basic Excavating 40hr (1 cr.)</b>	Instructs students on the basics of excavating dirt for building construction, underground utilities and sitework projects. Focuses on the safe and productive operation of backhoes, front-end loader, and other related excavating equipment.

## Course Descriptions

- 50447511 Assembly/Disassembly (1 cr.)** Training on OSHA's 1926.140cc assembly and disassembly of telescopic or lattice cranes. Emphasis will be placed on assembly/disassembly director, manufacturer or employer procedures, and power line safety. Students will assemble and disassemble cranes in the field. Students will need to choose Telescopic or Lattice.
- 50447512 Scraper (2 cr.)** Instructs students on the basics of moving dirt on road building and sitework projects. Focuses on the safe and productive operation of bulldozers, motor scrapers, compactors and other related earthmoving equipment.
- 50447513 Op Eng-Basic Excavating (2 cr.)** Instructs students on the basics of excavating dirt for building construction, underground utilities and sitework projects. Focuses on the safe and productive operation of backhoes, front-end loader, and other related excavating equipment.
- 50447514 Entry Level Driver Training (1 cr.)** Obtain a Class A or Class B CDL for the first time or upgrade an existing Class B CDL to a Class A CDL. Students looking to obtain a school bus (S), passenger (P), or hazardous materials (H) endorsement for the first time will need to successfully pass Entry Level Driver Training.
- 50447515 Op Eng-Basic Paving (2 cr.)** Instructs students on the basics of paving and patching roadways and parking lots. Focuses on the safe and productive operation of pavers, compactors, motor graders, and other related paving equipment.
- 50447517 Part 107 UAV Test Preparation - 32 hours (1 cr.)** Provides students with a comprehensive look at the use and versatility of Drones on today's construction projects. After completing this course, you will be able to prepare for your Part 107 Commercial Drone Pilot's License Test. The primary focus will be on instructing our Operating Engineers in the Federal Aviation Administration (FAA) rules and regulations for the safe and responsible use of a sUAS/UAV in the National Airspace System (NAS), according to the guidelines of the PART 107 Remote Pilot Certification Standard. We will discuss drones in construction, how this emerging and growing sector is influencing the jobsite and safety.
- 50447518 Clearing and Grubbing (1 cr.)** Introduces students to the Department of Transportation's 201 Clearing and Grubbing and 202 Roadside Clearing Standard Specifications. These Specifications include cutting, removal and disposal of trees, brush, roots and stumps within the clearing limits of a jobsite. Curriculum covered will include equipment maintenance, safety, mathematical concepts, conservational methods and operational techniques. Specific operational techniques may include tree felling, forestry mulching, chipping, grinding, transportation and stump removal.

## Course Descriptions

- 50447520 Op Eng Dozer (2 cr.)** Instructs students on the smaller finish dozers. They will learn how to work around obstacles like culverts, manholes, etc. They will be instructed how to work on slopes using the newest technology in automated grading systems. Students will work on the developing of skills to be a finish operator.
- 50447521 Op Eng Motor Grader (2 cr.)** Instructs students on working with the newest automated control systems and working with finish graders.
- 50447522 Op Eng Advanced Excavating (2 cr.)** Instructs students in planning mass excavations, deep trenches, wet trenches, dredging and other advanced skills.
- 50447523 Concrete Paving (1 cr.)** Learn about concrete paver operations, paving procedures and processes, safety practices, and maintenance.
- 50447524 Advanced Crane (2 cr.)** Instructs students in specializing driving and extraction of piling and sheeting. They will work on standing up hammer and leads, capping piling, battering piling, and students will have the opportunity to drive piling to bearings. They will also be driving and extracting sheeting walls and bearings. Students must have taken the Friction Crane course or have equivalent experience.
- 50447525 Trimble-Business Center (1 cr.)** Provides the basics of creating a design model for use in G.P.S. guided machines and rovers, as well as how to construct a simple takeoff. This skilled training will include how to import and export site and road projects into several GNSS systems.
- 50447529 Forestry (1 cr.)** Introduces students to the Department of Transportation's 201 Clearing and Grubbing and 202 Roadside Clearing Standard Specifications. These Specifications include cutting, removal and disposal of trees, brush, roots and stumps within the clearing limits of a jobsite. Curriculum covered will include equipment maintenance, safety, mathematical concepts, conservational methods and operational techniques. Specific operational techniques may include tree felling, forestry mulching, chipping, grinding, transportation and stump removal.
- 50447530 Op Eng-Basic Equipment (2 cr.)** Introduces students to the machines, industries and processes that operating engineers may be involved with. Students will also receive instruction and certification/qualification in Operator Qualification (OQ), Qualified Crane Assistant (QCA) and telehandler/forklift.
- 50447531 Basic/Telescopic Crane (2 cr.)** Instructs students at introductory level, to hoisting operations with mobile cranes. Key concepts are operator responsibility, principles of operation, terms/definitions and manufacturers' instructions.
- 50447532 Op Eng-Lattice Crane (2 cr.)** Instructs students in the pre-op inspection, assembly, setup and use of cranes utilizing lattice boom design. Students also receive instruction in basic rigging, regulations, hoisting processes and multi-line operation.

## Course Descriptions

<b>50447533 Op Eng-Telescopic Crane (2 cr.)</b>	Instructs students in the pre-op inspection, setup and use of cranes utilizing telescoping boom design. Students will also receive instruction in basic rigging, regulations and hoisting processes.
<b>50447536 Basic Maintenance (1 cr.)</b>	Will introduce students to basic mobile equipment maintenance. Students will be instructed in maintaining engines, hydraulics, electrical systems, lubricants, and machine undercarriages with an emphasis on the use of the operator manual maintenance sections. Shop and field maintenance safety will be daily topics as well as proper use and identification of hand tools and shop tooling.
<b>50447538 Dozer-Advanced (1 cr.)</b>	Will be offered to operators with previous experience in Dozer. Operators will study advanced techniques of finish dozer work such as sloping, gravel spreading, curb grading, and ditching.
<b>50447539 Excavating-Advanced (1 cr.)</b>	Will be offered to operators with previous experience in excavating. Students will study the concepts of efficient cycle times, truck loading, mass excavations, undercutting roadways, and foundation excavations.
<b>50447540 Disaster Site Worker (1 cr.)</b>	Provides the basic understanding of the role of skilled support workers in response to natural and man-made disasters. A key element to the learning objectives is to increase awareness of the difference between disaster sites and regular construction or demolition sites. Successful participants will be able to demonstrate a clear understanding of the Incident Command System, the proper inspection and use of an air-purifying respirators and other key points. The goal of this course is to establish a growing contingent of appropriately credentialed operating engineers who are recognized and may be called upon by emergency response organizations at all levels of government.
<b>50447543 Operating Engineers Intro to Basic Equipment (1 cr.)</b>	Introduces student to heavy equipment used in the construction industry. Students will also be instructed on basic safety, maintenance, and communication methods that operating engineers may be exposed to.
<b>50447544 Operating Engineers Applied Basic Equipment (1 cr.)</b>	Provides students with specialized instruction and valuable experience on basic heavy construction equipment. Emphasis will be geared toward practical exercises on safety, efficiency, and skill development.
<b>50447545 Scraper-Advanced (1 cr.)</b>	Involves advanced techniques in sloping, grading, and ditching, as well as time spent working on the skills needed to be a finish operator.

## Course Descriptions

- 50447546 Load Charts & Regulations (1 cr.)** Is a one week course with the goal of informing the student in the OSHA/ASME hoisting and mobile crane regulations and the intricacies of the proper use of various crane manufacturers capacity charts. Students can expect to spend a great deal of time using various charts to calculate capacities.
- 50447547 Motor Grader-Advanced (1 cr.)** Can be tailored for any level of experience or geared to provide evaluations for more experienced operators. Topics covered include safety aspects, preventive maintenance, operating techniques, and proper procedures for using motor graders in both classroom and hands-on simulations.
- 50447548 Welding Basics (1 cr.)** Focuses on welding safety, equipment set-up and operation, electrode selection, gas selection, and basic metallurgy when welding steel using both stick and wire feed methods. Repair welding with torch set-up and operation, air arc operation, and plasma cutting are also emphasized.
- 50447549 Scraper 40-Hours (1 cr.)** Introduces operators to basic scraper applications using single engine scrapers, push tractors and related support equipment. Instruction will include equipment controls, safe operation, jobsite navigation and key communication processes.
- 50447558 Asphalt Paving (2 cr.)** Prepares Operating Engineers to work in the asphalt paving industry by examining the various processes involved in producing a finished product. The class will also demonstrate the processes and introduce the automatic controls used in the industry.
- 50447559 Advanced Grade Machine Control (1 cr.)** Teaches workers how to import data into the control box and select the surface for grading. They will have practical experience offsetting objects both horizontally and vertically. They will also gain knowledge on lane guidance and where to use it, as well as understand how to create designs both flat plane and sloping plane.
- 50447560 Directional Drilling (2 cr.)** Explains that working this horizontal drilling (HDD) program as a new hire with little to no experience is the first step a worker can make to become successful in this field. This HDD program entails drilling safety, set up, operation of equipment, and also detailed knowledge of how each area works. There is extensive hands-on training during this course.
- 50447561 Advanced Grade Rover (1 cr.)** Teaches workers how to localize/calibrate sites using local coordinates. They will learn how to stake lines, surfaces, and points, as well as acquire hands-on skills recordings as-builds and topographical surveys using points and lines. Workers will understand how to import and export data for office use.

## Course Descriptions

<b>50447562 Demolition - Op Eng (1 cr.)</b>	Teaches participants to recognize hazardous material, locate utilities, and read work plans, while covering site specific safety necessary to razing a structure. They will prepare and dismantle structures of varying materials (concrete, steel, wood, etc.) to manageable sizes for distribution or redistribution.
<b>50447568 Advanced Grade-Machine Control-Trimble (1 cr.)</b>	Provides training exclusively dedicated to the corresponding GPS Trimble machine control. Instruction will include off-setting grade horizontally and vertically from surfaces. Students can also expect to create simple designs using the control box as well as recording data for office use.
<b>50447569 Accelerated Machine Control (1 cr.)</b>	Is a two day course which will focus on machine control emulator software in a classroom setting. Students will navigate through menus, simulate machine control activities and troubleshoot issues.
<b>50447570 Advanced Grade - Rover (1 cr.)</b>	Provides training exclusively on the corresponding Topcon or Trimble equipped rovers. Training will revolve around the data collector and the different ways to lay out projects and record data. The Topcon course will utilize Topcon 3-D Office. The Trimble course will utilize Trimble Office Synchronizer and SCS Report Utility.
<b>50447571 Advanced Grade-Business Center (1 cr.)</b>	Is designed for the foreman/lead operator with the computer experience necessary to progress to the next level, this course will focus on understanding work flow guides and the functions of Business Center™HCE.
<b>50447572 Intro to UAV (Drone) Operation (0 cr.)</b>	Is a one day course which will stress FAA regulations that comply with commercial UAV operations. Weather permitting, students will take part in construction site mapping using a UAV to obtain geographically obtained images. UAV data will be exported and processed using PIX4D software to achieve earthwork volume calculations.
<b>50447573 Adv Electrical/Hydraulic Troubleshooting (1 cr.)</b>	Explores comprehensive techniques for troubleshooting modern control systems on later model equipment such as components, schematics, digital multi-meter use and applied theory. Prior experience & knowledge of basic and electrical hydraulic systems is preferred.
<b>50447574 Air Conditioning Certification (0 cr.)</b>	Is a 4-hour workshop which will be devoted to MACS 609 Technician and Certification Training. Technicians need Federal EPA 609 Technician and Certification to work on vehicle/heavy equipment air conditioning systems.
<b>50447575 Competent Person (0 cr.)</b>	Is training which is required of at least one person on every excavating crew, and every excavator operator should know the information taught in this one-day course. Certification is good for 5 years.

## Course Descriptions

<b>50447576 Demolition (1 cr.)</b>	Trains operators to discover how to recognize hazardous material, locate utilities, and read work plans while covering site specific safety necessary to razing a structure. Students will prepare and dismantle structures of varying materials (concrete, steel, wood, etc.) to manageable sizes for disposal or redistribution.
<b>50447577 OSHA 30 - Operating Engineers (1 cr.)</b>	Is a four-day in-depth OSHA safety course. This comprehensive training is designed for safety professionals and provides a variety of in-depth instruction on OSHA Construction Industry Standards for worker health and safety. Meets OSHA Standard CFR 1926.
<b>50447578 Overhead Crane (0 cr.)</b>	Introduces students to the basics of overhead crane safety. Topics will include: terminology, inspection, operational safety, and rigging. Emphasis will be placed on the various regulations that apply to hoisting using this type of machinery. Primarily classroom related, there may be some practical field exercise.
<b>50447579 Skidsteer Safety (0 cr.)</b>	Focuses primarily on safety in and around a skidsteer. Basic skidsteer operation will be taught in addition to general maintenance.
<b>50447580 Tele-Handler/Forklift Safety (0 cr.)</b>	Utilizes telescopic material handler and rough terrain forklifts, giving students an understanding of forklift and tele-handler operation, safety, and inspection. Covers OSHA 29 CFR 1910.178 standards. Re-certification is required every 3 years.
<b>50447581 Tele-Handler/Forklift Re-Cert (0 cr.)</b>	Is for operators with a CURRENT certification, this course will update you on existing policies and procedures as well as renew your knowledge in the safety requirements for telescopic material handlers. Telescopic material handlers and rough terrain forklifts are utilized in this class. Re-certification is required every 3 years.
<b>50447583 Qualified Traffic Flagger (0 cr.)</b>	Is a 4-hr. class, in which the student will learn about the risks and proper flagging techniques involved in safely controlling traffic in our construction zones. While not yet required by WISDOT, the qualification is beneficial to those individuals who may be engaged in controlling traffic. Some of the topics covered are: sign placement, risk, communication (with 2nd flagger), proper technique, and courtesy. Completion of this class will result in a student qualification.

## Course Descriptions

<b>50447584 Basic Grade (1 cr.)</b>	Covers instruction in working with the engineers ruler using tenths and hundredths, how to calculate basic quantities, working with elevations, figuring cut and fill to finish grade and sub-grade. Topics also include interpreting and working with grade stakes while learning the basic grade setting and staking process. In the field students will be trained how to use lasers, eye levels, standard rods and lenker rods. Also includes a basic introduction to plan reading.
<b>50447585 Electrical Maintenance (1 cr.)</b>	Introduces the learner to basic electrical theory and mobile machine electrical maintenance. Training in electrical schematics, test equipment, component identification, and operator level equipment repairs will be the emphasis of this 40-hour course.
<b>50447586 Powertrain Maintenance (1 cr.)</b>	Introduces the student to basic powertrain systems. The learner will be engaged in theory and hands-on activity in power flow, schematics, component identification and system maintenance in this course.
<b>50447587 Hydraulic Maintenance (1 cr.)</b>	Introduces the learner to basic hydraulic theory, hydraulic components, basic schematics, operator level function checks and testing. An emphasis will be on control functions and actuators as well as hydraulic system maintenance.
<b>50447588 Intermediate Grade (1 cr.)</b>	Covers how to read and understand site grading, road grading, paving and foundation plans and specifications. New technology is introduced including GPS.
<b>50447589 Geo-Thermal (1 cr.)</b>	Presents the advantages of going green. The class will perform laying out and digging the excavation of a typical horizontal geo-thermal heating/cooling installation.
<b>50447590 Wind Turbine (1 cr.)</b>	Presents the advantages of going green. The class will utilize simulation and actual crane operations to set the tower, nacelle and rotor.
<b>50447591 Concrete Pumping (1 cr.)</b>	Includes topics of general requirements, PPE, setting a pre-pour plan, selecting the right size and type of equipment required to make the pour, the concrete pumping system, and where to locate the pump in the safest position.
<b>50447592 Construction Regulations (1 cr.)</b>	Incorporates OSHA 10+, MSHA "New Miner and First Aid/CPR into one 40-hour class. Some of the topics covered: Blood-borne pathogens, confined space entry, demolition, electrical safety, excavations & trenching, fall protection, fire protection & hot-work, hazard communication, lockout/tag-out, material handling, hoists, cranes & rigging, motor vehicles & motorized equipment, Personal Protective Equipment (PPE), power industrial trucks, Process Safety Management (PSM), scaffolds, lifts, ladders & stairways, signs, signals, & barricades.

## Course Descriptions

<b>50447593 40-Hour Hazmat (1 cr.)</b>	Provides basic information needed to protect HAZWOPER site workers from health, physical, and biological hazards. This course meets the requirements of OSHA 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response) and OSHA 29 CFR 1910.146 (Permit Required Confined Space). Instruction is a combination of both hands-on and classroom instruction.
<b>50447594 Advanced Grade - Machine Control - Topcon (1 cr.)</b>	Provides training exclusively dedicated to the corresponding GPS Topcon machine control. Instruction will include off setting grade horizontally and vertically from surfaces. You can also expect to create simple designs using the control box as well as recording data for office use.
<b>50447595 MSHA-New Miner (1 cr.)</b>	Provides an introduction to the statutory rights of miners and their representatives under the Act: Authority and responsibilities of supervisors, self-rescue and respiratory devices, transportation controls, and communications systems. Also includes introduction to work environment, escape and emergency evacuation plans, fire warning, and firefighting. Ground control, working areas of high walls, water hazards, pits and spoil banks, illumination, and night work are also covered, as well as hazard recognition, electrical hazards, first aid, and explosives. Health and safety aspects of the tasks to which a new miner will be assigned.
<b>50447596 OSHA 10 (1 cr.)</b>	Is a two-day required course for members working in the construction industry. Topics covered include but are not limited to: Fall Protection, Caught-In Between, Struck By, Electrical hazards, Personal Protective Equipment, as well as other basic safety and health principles. Meets OSHA Standard 29 CFR 1926.
<b>50447597 CPR and 1st Aid (0 cr.)</b>	Is intended to help participants feel more confident in their ability to act appropriately in the event of an emergency. Training will be provided in basic First Aid/CPR/AED by certified instructors.
<b>50447598 Construction Management Foreman (1 cr.)</b>	Examines basic management principles from the perspective of a construction foreman. Basic curriculum covered includes, but is not limited to: Mathematical Equations, Computer Skills (Word, Excel, Google Earth, GIS, Email, File Management), Roadway Plan Interpretation/WISDOT Standard Specifications, Ethics, Communication, Production, Construction Processes and Safety. Training will consist of classroom instruction only.

## 449 - Industrial Safety

## Course Descriptions

<b>10449102 Regulatory Compliance (3 cr.)</b>	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.
<b>10449103 Accident Investigation (3 cr.)</b>	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.
<b>10449106 Construction Accident Prevention (3 cr.)</b>	Examines the requirements for managing safety programs on construction sites, to include regulatory requirements, financial aspects, risk management, and loss reduction.
<b>10449109 Industrial Fire Protection (3 cr.)</b>	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.
<b>10449115 Industrial Hygiene Concepts (3 cr.)</b>	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.
<b>10449116 Conducting EHS Training (1 cr.)</b>	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.
<b>10449118 Construction Hazard Recognition (3 cr.)</b>	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.
<b>10449119 Ergonomics (3 cr.)</b>	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.
<b>10449120 Safety Management Systems (3 cr.)</b>	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

<b>10449134 Environmental Laws &amp; Regulations in Industry (3 cr.)</b>	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.
<b>10449162 Fundamentals of Occupational Safety (3 cr.)</b>	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.
<b>10449168 Fall Protection (3 cr.)</b>	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.
<b>10449169 Material Handling in Construction (2 cr.)</b>	Discusses common material handling situations within construction include crane safety, rigging requirements, powered industrial trucks, and manual material handling hazards.
<b>10449171 Trenching and Excavation Safety (1 cr.)</b>	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.
<b>10449173 Construction Safety with OSHA 10 (1 cr.)</b>	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.
<b>10449180 Construction Trades Safety (2 cr.)</b>	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.
<b>10449181 Safety Engineering and Technology (3 cr.)</b>	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.

## Course Descriptions

<b>10449183 Hazardous Materials Management (3 cr.)</b>	Provides information regarding relevant laws and regulations, relevant scientific principles and their application, and best management practices of hazardous materials.
<b>10449185 Construction Compliance (3 cr.)</b>	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.
<b>10449188 Essentials of Manufacturing Safety (1 cr.)</b>	Provides information on the safety responsibilities of workers within the manufacturing industry. Special emphasis will be placed on common hazards and methods of controls.
<b>10449189 Manufacturing Safety w/OSHA 10 (1 cr.)</b>	Introduces students to hazards common to the manufacturing environment. Topics include personal protective equipment, electrical safety, chemical safety, fall protection, and fire protection.
<b>455 - Supervision -Management</b>	
<b>10455101 Site Layout and Construction (CMT) (2 cr.)</b>	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.
<b>10455102 Introduction to Construction Management (CMT) (1 cr.)</b>	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.
<b>10455103 Understanding Construction Documents (CMT) (1 cr.)</b>	Explores the contents of construction documents including site civil, structural, architectural, and MEP design and specifications. Applies knowledge of the design and specifications through the interpretation of the drawings, models, and the project manual. Navigates all facets of the construction documents to examine a project by discipline and as a system.
<b>10455104 Construction Engineering Fundamentals (CMT) (3 cr.)</b>	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.
<b>10455105 Foundation System (CMT) (2 cr.)</b>	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.

## Course Descriptions

<b>10455106 Construction Estimating (CMT) (2 cr.)</b>	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.
<b>10455107 Construction Management Internship (CMT) (2 cr.)</b>	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.
<b>10455108 Construction Contracts and Law (CMT) (2 cr.)</b>	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.
<b>10455109 Construction Scheduling (CMT) (2 cr.)</b>	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.
<b>10455110 Software Fundamentals for Construction (CMT) (1 cr.)</b>	Applies business and construction software solutions to functional applications in construction. Explores and applies applications utilizing software that is needed to write and create documents, presentations, emails, and spreadsheets. Explores the use of project management and document management software. Collaborates with software and practices the use of business communication platforms utilized in the construction industry.
<b>10455111 Structural Systems (CMT) (2 cr.)</b>	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.
<b>10455112 Exterior Enclosure Systems (CMT) (2 cr.)</b>	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.
<b>10455113 Construction Project Management (CMT) (2 cr.)</b>	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

<b>10455114 Construction Materials and Methods 1 (CMT) (2 cr.)</b>	Explores the materials and techniques used to construct foundation and structural shell systems of a building. Analyzes the capacity and requirements for efficient installation of concrete, steel, wood, and engineered systems to construct the structural core of a vertical structure including interior partition framing. Examines code compliancy, adherence with construction documents, and specific governing organizational guidelines.
<b>10455115 Virtual Design and Construction (CMT) (2 cr.)</b>	Explore the integration of design, construction, and operations of construction projects through the use of Building Information Modeling (BIM) systems. Utilize Navisworks Manage to collaborate digital twin models. Create clash detection reports of building systems for BIM coordinated projects. Redline, mark up, measure 3D Navisworks models. Integrate cost loaded project schedules with time liner feature. Create take offs using the digital twin model. Moreover, learn Bluebeam techniques for efficient information sharing for preconstruction to closeout documents.
<b>10455116 Sustainable Design and Construction (CMT) (2 cr.)</b>	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.
<b>10455117 Construction Materials and Methods Lab (CMT) (4 cr.)</b>	Applies the methods of installation of core and shell elements of a vertical structure. Layout and install/erect structural building elements including cast-in-place and precast concrete, masonry, structural steel, steel trusses, steel deck, and cold-formed steel frame wall systems. Execute the planning, operational supervision, and installation of a commercial structure.
<b>10455118 Interior Building Finishes (CMT) (2 cr.)</b>	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.
<b>10455120 Revit Architecture (CMT) (2 cr.)</b>	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.

## Course Descriptions

<b>10455121 Understanding Construction Drawings (CMT) (1 cr.)</b>	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.
<b>10455123 Construction Financial Management (CMT) (2 cr.)</b>	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.
<b>10455124 Your Role in a Green Environment (1 cr.)</b>	Covers the impacts of the built environment on the green environment. It introduces methods to reduce the impact on the green environment and explains how to apply the principles of a green building rating system.
<b>10455125 Construction Management Field Study (CMT) (1 cr.)</b>	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.
<b>10455126 Mechanical, Electrical &amp; Plumbing Systems (CMT) (3 cr.)</b>	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.
<b>10455127 Construction Safety Management (CMT) (2 cr.)</b>	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.

## Course Descriptions

### **10455130 Construction Materials and Methods 2 (CMT) (2 cr.)**

Explores the materials and techniques used to construct exterior shell and core interior fit-out systems of a building. Analyzes the capacity and requirements for efficient installation of all elements and systems to construct the exterior shell of a vertical structure including thermal and moisture, roofing, cladding, glazing, sealants, flashing, and stormwater management. Analyzes the capacity and requirements for efficient installation of all elements and systems to construct the interior fit-out of a vertical structure including acoustics, openings, wall/ceiling/floor finishes, FF&E, specialties, and conveying systems including stairs. Examines code compliancy, adherence with construction documents, and specific organizational guidelines.

### **10455140 Construction Supervision (CMT) (2 cr.)**

Focuses on the function of construction supervision. Practices routine communication, reporting, and documentation techniques. Executes daily and weekly task requirements of a superintendent. Focuses on the oversight of project schedules, site logistics, safety, trade labor coordination, and quality control.

### **10455142 Sustainable Construction Practices (CMT) (1 cr.)**

Explores sustainable rating systems, design and construction of sustainable projects, and energy systems. Examines industry applications measured through the Triple Bottom Line principle: People, Planet, and Profit. Selection of construction methods that ensure construction projects minimize their environmental impact while supporting the economic wellbeing and social welfare of the communities in which they are constructed.

### **10455150 Construction Project Management (CMT) (2 cr.)**

Focuses on the leadership skills of a Construction Project Manager. Interactively explores the function and practice of leading a project team. Executes project initiation, planning, execution and control, and closeout activities. Practices effective communications techniques, human resource interface, and balance of workplace culture.

### **10455152 Industrialized Construction (CMT) (2 cr.)**

Explore principles of industrialized construction through the study of mechanized and automated construction techniques and applications. Apply methods for increasing labor productivity, utilization of mechanized assembly, prefabrication of components and assemblies, and fast-tracking installation and commissioning of construction projects. Employ integrated lean construction techniques to reduce costs, installation time, risk and re-work, and maintain project quality and safety.

## **457 - Metal Fabrication**

## Course Descriptions

<b>10457131 Manufacturing Enterprises for Fabrication (3 cr.)</b>	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.
<b>10457141 Advanced Manufacturing Processes (2 cr.)</b>	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.
<b>10457160 Manufacturing Processes (2 cr.)</b>	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).
<b>10457161 Cutting Processes (2 cr.)</b>	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.
<b>10457162 Pattern Drafting Processes (2 cr.)</b>	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).
<b>458 - Commercial Driving</b>	
<b>30458301 Commercial Driver's License-Theory (2 cr.)</b>	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.

## Course Descriptions

<b>30458302 Class A CDL-Behind the Wheel Range (3 cr.)</b>	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.
<b>30458303 Class A CDL-Behind the Wheel Public Road (3 cr.)</b>	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).
<b>30458304 Commercial Driver's License-Theory 2 (1 cr.)</b>	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.
<b>30458306 Class B CDL-Range and Road (3 cr.)</b>	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.
<b>30458341 Intro to Truck Driving (1 cr.)</b>	Students will attend an in-person or virtual Intro to Truck Driving course, which includes welcome material, a tour of Truck Driving facilities, and an overview of the syllabus and course outcomes, along with Federal Motor Carrier Safety Regulations (FMCSR's) information. An overview of vehicle control systems, pre-, en-route, and post-trip inspections will be given, as well as an introduction to vehicle transmissions and shifting using our state-of-the-art truck simulators.
<b>30458342 Basic Operation of a Commercial Vehicle (1 cr.)</b>	Course covers basic operation of a combination commercial motor vehicle, along with a demonstration of air brake systems. Proper techniques for coupling/uncoupling of a Class A commercial combination vehicle will be reviewed and practiced, along with basic backing exercises.
<b>30458343 Range Maneuvers of a Commercial Vehicle (1 cr.)</b>	Students will continue to build on backing skills, to include 90- and 45-degree backing and parallel backing maneuvers, as well as other slow maneuver operating practices.
<b>30458344 Safe Commercial Vehicle Operation (1 cr.)</b>	Course covers behind-the-wheel safe commercial vehicle operations, including driver behavior, communication with other vehicles, and speed/space management. Hours of service will also be covered.
<b>30458345 Road Maneuvers of a Commercial Vehicle (1 cr.)</b>	Students will begin behind-the-wheel activities in a Class A commercial combination vehicle on a public roadway in a variety of situations, including: roundabouts, turns, lane changes, on/off ramps, interstate driving, and railroad crossings. Students will also be introduced to CDL test items.

## Course Descriptions

### **30458346 Advanced Operating Procedures (1 cr.)**

Students will further their knowledge of operating procedures with behind-the-wheel activities and online learning to understand and prepare for: night operation, extreme driving conditions, skid control/recovery, emergency maneuvers, and button-hooks. How to avoid distracted driving and hazards will also be covered.

### **30458347 Vehicle Systems and Reporting Malfunctions (1 cr.)**

Course covers identification/diagnosis of malfunctions on a Class A commercial combination vehicle, how to handle roadside inspections, basic maintenance, and sliding tandems and 5th wheels, as well as a variety of vehicle technologies. Compliance and safety will be covered, along with how to handle cargo and specialty vehicle operations (doubles/triples, flatbed, tanker, etc.).

### **30458348 Non-Driving Activities (1 cr.)**

Students will learn a variety of non-driving techniques/procedures important to day-to-day operations of a Class A commercial combination vehicle. These include, but are not limited to: trip planning, business practices, wellness/fatigue prevention, post-crash procedures, and external communication. Special situations and circumstances, along with medical requirements for commercial licensing, will be covered as well.

### **31458306 CDL Truck Driving for Diesel Program (3 cr.)**

Provides the skills that technicians need to perform on-road testing and diagnostics with Tractors & Trailers. Pre-trip inspection procedures, laws, backing exercises, shifting and driving techniques with a Tractor Trailer & Straight Truck are covered.

## **461 - Small Engine + Chassis Mechani**

### **10461112 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.

### **10461150 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.

### **10461151 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.

### **10461152 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.

## Course Descriptions

<b>10461153 OPE DC Electrical &amp; Fuel Mgmt Systems (3 cr.)</b>	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.
<b>10461154 Hydraulics, Drivelines, and Chassis (3 cr.)</b>	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.
<b>10461155 OPE Diesel Engine Systems (3 cr.)</b>	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.
<b>10461156 Motorcycle &amp; Moped Service &amp; Repair (3 cr.)</b>	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.
<b>10461157 ATV &amp; UTV Service &amp; Repair (3 cr.)</b>	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.
<b>10461158 Motorcycle &amp; Moped Electrical Diagnostics (3 cr.)</b>	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.
<b>10461159 ATV &amp; UTV Electrical &amp; Diagnostics (3 cr.)</b>	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.
<b>31461301 Intro to Outdoor Power Equipment (2 cr.)</b>	Introduces the student to the outdoor power equipment/powersports industry. Emphasizes safety, precision measuring, fasteners, tool usage, basic shop skills and predelivery/maintenance inspection of equipment. Utilizes computer software programs to create work orders, invoices and parts look up.

## Course Descriptions

### **31461302 Outdoor Power Equipment Diesel Engine Systems (2 cr.)**

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

## **462 - Industrial Equip Mechanic**

### **31462301 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 - Construction Trades General**

### **31476301 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.

### **31476302 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.

### **31476304 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.

### **31476305 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.

### **31476307 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 - Airframe & Aircraft Technology**

### **10486100 Aircraft Fundamentals (2 cr.)**

Explore the principles of flight and the basic design of aircraft. Introduces students to the nomenclature, history, and configuration of aircraft. Students will also learn about the theory of flight, aerodynamics, and basic meteorological concepts.

### **10486101 Aviation Records, Regulations & Publications (3 cr.)**

Introduces the student to the Code of Federal Regulations that govern U.S. civil aviation. Generate various aircraft maintenance records that document: repairs, alterations, weight and balance changes, life-limited parts, and inspection status. Students will also study how various manufactures' documents are used in the maintenance of aircraft.

## Course Descriptions

<b>10486102 Aircraft Materials &amp; Hardware (2 cr.)</b>	Introduces the materials, hardware, and processes used to maintain aircraft. Students practice the proper use of hand and power tools. Students will also demonstrate the proper installation, torquing, and securing of fasteners. Students will fabricate rigid fluid lines and flexible hoses.
<b>10486103 Aircraft Corrosion Control (2 cr.)</b>	Apply the principles of corrosion control in the preservation of aircraft. Introduces the student to the different forms, causes, removal, and prevention of corrosion. Students will have the opportunity to also identify, inspect, and apply surface finishing materials to aircraft structures.
<b>10486104 Inspection Fundamentals (1 cr.)</b>	Inspect aircraft and components to determine airworthiness. Introduces the student to visual, dimensional, and non-destructive inspection techniques. Use precision measuring equipment and perform magnetic particle, dye penetrant, eddy current, and ultrasonic tests to identify defective parts.
<b>10486105 Ground Handling &amp; Servicing (1 cr.)</b>	Prepares the student to operate in the maintenance environment by covering ramp safety, ground operations, preflight, engine runs, and aircraft servicing.
<b>10486110 Aircraft Instrument Systems (3 cr.)</b>	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.
<b>10486111 Basic Avionics Systems (3 cr.)</b>	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.
<b>10486112 Materials and Installation (3 cr.)</b>	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.

## Course Descriptions

- 10486114 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.
- 10486120 Avionics Fundamentals (2 cr.)** Introduces the student to the operation and use of various communication and navigation systems used by flight crews as they travel around the globe. Learn how a combination of ground, air, and satellite-based stations are used by aircraft to coordinate traffic and avoid mishaps as they deal with changing weather conditions. Students will also use test equipment to evaluate proper systems operation.
- 10486121 Airframe Instrumentation (2 cr.)** Introduces the operating principles used by aircraft instruments to detect and display information about the flight environment and aircraft's performance. Prepares students to work with pressure, gyroscopic, and directional instrumentation. Electronic flight instruments, centralized aircraft monitoring, and crew alerting systems will also be explored.
- 10486122 Airframe Electrical Power (2 cr.)** Learn how to maintain aircraft electrical systems. Component operation, power sources, and power distribution will be studied. Students will have the opportunity to install, terminate, and repair electrical wiring. Troubleshooting, repair, and maintenance of switches, relays, circuit protective devices, and electric motors is also covered.
- 10486123 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.
- 10486124 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.
- 10486125 Aircraft Metallic Structures (2 cr.)** Apply the different techniques used to inspect, maintain, and repair metallic structures. Students will be able to practice designing, bending, forming, and installing sheet metal repairs. Installation of antennas and other avionics equipment will be covered.

## Course Descriptions

<b>10486126 Airframe Fuel Systems (1 cr.)</b>	Inspect, troubleshoot, and repair fuel systems onboard the aircraft. Students will explore different fuel types, storage, distribution, and quantity indication sub-systems used in aviation.
<b>10486127 Aircraft Technical Drawings (1 cr.)</b>	Interpret aircraft blueprints, charts, and graphs. Students will identify symbols, lines, and terminology used in aircraft applications. Students will sketch repairs and alterations made to aircraft.
<b>10486130 Avionics Co-op 1 (1 cr.)</b>	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.
<b>10486140 Avionics Control Systems (2 cr.)</b>	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.
<b>10486141 Powerplant Instrumentation (1 cr.)</b>	Introduces operating principles and use of engine instruments to detect and display engine performance data. Students will study the operation and use of mechanical and electronic systems for engine indicator and crew alerting systems. Maintenance, inspection, and troubleshooting of engine instrument systems and components will be covered.
<b>10486142 Powerplant Electrical Power (1 cr.)</b>	Learn how the engine is used to supply electrical power to the aircraft. Students will study the operation of power generation and starter circuits. Practice maintaining alternators, generators, starter motors, and other electrical components on the powerplant.
<b>10486143 Avionics Surveillance Systems (3 cr.)</b>	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.

## Course Descriptions

- 10486144 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.
- 10486145 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.
- 10486146 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.
- 10486160 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.
- 10486161 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.
- 10486163 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.
- 10486166 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.

## Course Descriptions

<b>10486167 Technical Drawings &amp; Diagrams (1 cr.)</b>	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.
<b>10486168 Human Factors (1 cr.)</b>	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.
<b>10486169 Avionics Navigational Systems (3 cr.)</b>	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.
<b>32486310 Aircraft Powerplants 1 (4 cr.)</b>	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.
<b>32486315 Powerplant Systems 1 (3 cr.)</b>	Covers the principles of fire protection and induction and exhaust systems including maintenance, inspection and troubleshooting of components and systems.
<b>32486316 Powerplant Systems 2 (2 cr.)</b>	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.
<b>32486322 Aircraft Systems 1 (2 cr.)</b>	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.
<b>32486323 Aircraft Systems 2 (4 cr.)</b>	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.

## Course Descriptions

<b>32486326 Structural Materials (3 cr.)</b>	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.
<b>32486327 Maintenance and Service (3 cr.)</b>	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.
<b>32486330 Aircraft Cabin &amp; Environmental Systems (1 cr.)</b>	Ensure the comfort and safety of passengers and pilots alike. Students will study how supplemental oxygen, cabin pressurization, and climate control systems allow for high altitude operations. Introduces students to the importance of maintaining potable drinking water and waste storage systems in creating a clean cabin environment.
<b>32486331 Aircraft Powerplant 2 (4 cr.)</b>	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.
<b>32486332 Airframe Protection Systems (2 cr.)</b>	Keep fire and ice from cutting a flight short. Students will study the operation, inspection, troubleshooting, and repair of airframe fire detection and extinguishing systems. Students will be introduced to how ice is detected, prevented, and removed from the airframe and the proper maintenance of these systems.
<b>32486333 Aircraft Inspection and Analysis (3 cr.)</b>	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.
<b>32486334 Aircraft Non-metallic Structures (2 cr.)</b>	From wood to carbon fiber, students will explore the different non-metallic structural materials used to construct aircraft. Students will repair composite structures using the vacuum bagging process. Sew a fabric covering and dope it on a wing mockup. Learn how to install, clean, and repair transparent plastics used in windows and windshields.
<b>32486335 Aircraft Hydraulics &amp; Pneumatics (2 cr.)</b>	Prepares students to maintain fluid power systems. Students will learn the operating principles, design, and components used in aircraft hydraulic and pneumatic systems. Ensure airworthiness through the inspection, troubleshooting, and repair of hydraulic and pneumatic systems.

## Course Descriptions

- 32486336 Aircraft Landing Gear (2 cr.)** Service, inspect, troubleshoot, and repair aircraft landing gear systems. Students will explore the different configurations and components that make up landing gear systems. Wheels, tires, brakes, shock absorption and gear retraction are covered.
- 32486337 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.
- 32486338 Aircraft Flight Controls (1 cr.)** Apply concepts of aerodynamics and how to control an aircraft by adjusting the flight control system. Students will balance and adjust primary flight controls. The inspection and repair of control cables and associated systems will be introduced. This includes flight controls on both fixed wing aircraft and rotorcraft.
- 32486339 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.
- 32486340 Airframe Inspections (1 cr.)** Inspect an airframe to determine airworthiness. Students will research maintenance records, perform required inspections, and ensure the aircraft's configuration conforms to approved documentation.
- 32486341 Turbine Engines (2 cr.)** Introduces students to the theory and design that makes turbine engines unique. Students will have the opportunity to perform different inspection, servicing, and troubleshooting tasks. The uses of special test equipment and proper operating procedures are also covered.
- 32486342 Turbine Systems 1 (2 cr.)** Examine how several sub-systems ensure the safe operation of turbine engines. Students will learn about engine cooling, ignition, and lubrication systems. The safe operation, maintenance, inspection and troubleshooting of these systems are covered.
- 32486343 Turbine Systems 2 (1 cr.)** Examine how intake and exhaust systems affect turbine performance. Students will study how these systems are designed to optimize airflow, suppress noise, and provide reverse thrust. The maintenance, inspection, and troubleshooting of components and systems is covered.
- 32486344 Powerplant Inspections (1 cr.)** Inspect a powerplant to determine airworthiness. Students will research maintenance records, perform required inspections, and ensure the engine's configuration and performance conforms to approved documentation.

## Course Descriptions

<b>32486345 Reciprocating Engines (2 cr.)</b>	Learn how a reciprocating piston engine operates. Apply the theory of operation while running and evaluating an engine. Students will have the opportunity to disassemble, clean, inspect, repair and reassemble an aircraft engine.
<b>32486346 Reciprocating Systems 1 (1 cr.)</b>	Explore the sub-systems needed to ensure an engine runs reliably and efficiently. Students will learn how the induction, exhaust, cooling, and lubrication systems affect engine operation and service life.
<b>32486347 Reciprocating Systems 2 (2 cr.)</b>	Examine the different ways precise timing of the ignition event is accomplished in aircraft engines. Students will study how aircraft magnetos, spark plugs, and auxiliary systems work together to ensure operation. Students will have the opportunity to troubleshoot, adjust, and service aircraft ignition systems.
<b>32486348 Powerplant Fuel Metering (2 cr.)</b>	Examine how the fuel/air ratio must be maintained to get the most out of an engine. Students will study how reciprocating engines use float carburetors, pressure carburetors, or fuel injectors to control the rate at which fuel is burned. Turbine engine fuel systems are also covered. Students will have the opportunity to install, adjust, troubleshoot, and repair fuel metering systems.
<b>32486349 Powerplant Protection Systems (1 cr.)</b>	Protect the engine from the hazards of fire and ice. Students will study the operation, inspection, troubleshooting, and repair of powerplant fire detection and extinguishing systems. Students will be introduced to how ice affects engine performance, how engines are designed to remedy these hazards and the maintenance of these systems.
<b>499 - Technical Studies</b>	
<b>10499039 Journeyworker-Advanced Standing - 39 Credits (39)</b>	Represents advanced standing for a Wisconsin Journeyworker Certificate of at least four hundred hours of instruction.
<b>501 - Medical Terminology</b>	
<b>10501101 Medical Terminology (3 cr.)</b>	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.
<b>10501104 Contemporary Healthcare Practices (2 cr.)</b>	An introduction to contemporary healthcare practices for students interested in a career serving diverse healthcare communities. Learners explore the essential skills required for equitable and inclusive person-centered interactions. Learners examine various health communities, mindful practices, professionalism, problem solving, and patient confidentiality.

## Course Descriptions

<b>10501107 Digital Literacy for Healthcare (2 cr.)</b>	The focus of this course is 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 (EHR). Healthcare EHR security issues, social media use, and digital healthcare resources are examined.
<b>10501118 Advanced Medical Coding (3 cr.)</b>	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.
<b>10501151 People Skills for Health Professionals (1 cr.)</b>	Explores professional/social interaction skills required for healthcare workers. Investigates values, ethical dilemmas, helping roles, assertiveness skills, communication with special populations, death/dying issues and stress management interventions. Participate in reflective self-study group discussions and service learning experiences. Develop a professional portfolio for future employment use.
<b>10501153 Body Structure and Function (2 cr.)</b>	Introduces basic anatomy and physiology of the human body. Students explore the basics of cells and cell chemistry and build on that knowledge to develop an understanding of tissues, organs, and organ systems. Students explore each body system and how systems function under normal (homeostatic) body conditions. Students develop an overall understanding of how the human body operates on a minute to minute, day to day, basis when all systems are functioning properly.
<b>31501301 Med Terminology (3 cr.)</b>	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.
<b>31501304 Contemporary Practices in Healthcare (2 cr.)</b>	An introduction to contemporary healthcare practices for students interested in a career serving diverse healthcare communities. Learners explore the essential skills required for equitable and inclusive person-centered interactions. Learners examine various health communities, mindful practices, professionalism, problem solving, and patient confidentiality.

## 502 - Barbering/Cosmetology

## Course Descriptions

<b>10502101 Aesthetic Spa Services 1 - Beginner (2 cr.)</b>	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.
<b>10502102 Aesthetic Spa Services 2 - Intermediate (2 cr.)</b>	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.
<b>10502104 Aesthetic Treatments (3 cr.)</b>	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.
<b>10502105 Aesthetician Mock Board Prep and Assessment (1 cr.)</b>	Prepares students for their State Board Licensing Exam.Â State curriculum and administrative code is examined and discussed. Students also identify the limitations of their license as it relates to the medical field.
<b>10502107 Advanced Aesthetic Treatments and Massage (1 cr.)</b>	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.
<b>10502108 Facial Treatments (3 cr.)</b>	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.
<b>10502109 Hair Removal Techniques (1 cr.)</b>	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.
<b>10502110 Make-up Techniques (1 cr.)</b>	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.

## Course Descriptions

<b>10502111 Aesthetic Theory (1 cr.)</b>	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.
<b>10502112 Medical Spa Aesthetics (2 cr.)</b>	Explore the aesthetician's role in healthcare and aspects of working in a medical setting. Become familiar with common medical-grade treatments and advanced skin care techniques.
<b>10502113 Laser Theory and Applications (2 cr.)</b>	Study safety and control measures within cosmetic laser environments, including Laser Safety Officer duties, contraindications to laser treatments and all related safety and first aid components. Explore the physics, safety, hazard assessment and risk management aspects of working with lasers, and discuss the compliance measures needed to meet OSHA and other regulatory requirements.
<b>10502114 Laser Treatments and Procedures (2 cr.)</b>	Study aesthetic laser treatments performed or assisted by aestheticians under the supervision of a medical director. Explore procedures including laser treatments, Botox, injections and soft tissue fillers, and learn to provide treatment assessments and plans.
<b>10502115 Advanced Make-up Techniques (2 cr.)</b>	Explore advanced makeup techniques through a variety of genres including theater, fashion, period, and photography. Study advanced forms of makeup application including airbrushing, tattooing, microblading, and eyelash extensions.
<b>10502116 Advanced Aesthetics Clinic 1-Introductory (2 cr.)</b>	Practice learned skills on clients by selecting modalities and treating the patient. Implement advanced treatments including dermabrasion, dermaplaning, oxygen, and ultrasound treatments, hydrafacials and medium-depth chemical peels in the FVTC Trilogy Salon and Spa.
<b>10502117 Advanced Facial Treatments (1 cr.)</b>	Study advanced skin treatments offered in a medical setting under the supervision of a physician or medical director. Gain theoretic knowledge of skin therapies including medium-depth skin peels and the use of lasers for collagen synthesis, cellular stimulation and hair reduction. Explore additional therapeutic applications of ultrasound and micro-current in both skin and body.
<b>10502118 Advanced Body Treatments (1 cr.)</b>	Explore advanced spa services, body treatments, and alternative massage-related therapies provided in a medical spa setting. Learn to identify, explain, and perform spa treatments and services suited for individual client needs.

## Course Descriptions

- 10502119 Advanced Aesthetics Clinic 2 - Intermediate (3 cr.)** Practice learned skills on clients by selecting modalities and treating the patient. Review protocols, consents and post-care education to be explained to the patient. Implement advanced treatments including monopolar and bipolar radio frequency, micro-needling and light pulse treatments in the FVTC Trilogy Salon and Spa.
- 10502120 Medical Conditions and Care (2 cr.)** Discover how to support the work of physicians and other aesthetic providers in a clinic setting. Learn how to record information in medical recordkeeping systems, prepare and handle medical instruments and supplies, and collect and prepare specimens of bodily fluids and tissues for laboratory testing.
- 10502121 Trends in Approaches to Skin Care (1 cr.)** Explore trending approaches to skin care and gain exposure to current technology and equipment. Tour facilities and participate in lectures and discussions with speakers representing laser and aesthetic equipment and medical grade products.
- 10502122 Advanced Aesthetics Clinic 3 - Mastery (3 cr.)** Continue to implement advanced aesthetic treatments in the FVTC Trilogy Salon and Spa while learning about advanced medical-level equipment and procedures. Shadow professional aestheticians, and perform aesthetic spa services.
- 10502123 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.
- 10502125 Anatomy & Physiology Aesthetics (1 cr.)** Applying laser treatment protocols, giving face and body treatments, and providing skincare analysis all require complex knowledge of the human body. Focus on advanced facial anatomy, musculature, and nervous systems relating to the application of medical aesthetics in this course.
- 10502156 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.

## Course Descriptions

- 31502301 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.
- 31502302 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.
- 31502303 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.
- 31502304 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.
- 31502305 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.
- 31502306 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.
- 31502307 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.
- 31502308 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.
- 31502309 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.

## Course Descriptions

<b>31502310 Salon Client Services 3 - Advanced (3 cr.)</b>	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.
<b>31502311 Cosmetology State Board Prep and Assessment (2 cr.)</b>	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.
<b>31502312 Nail Services (3 cr.)</b>	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.
<b>31502317 Cosmetology Theory (1 cr.)</b>	Presents theoretical concepts in microbiology and decontamination, general chemistry, micro-hair structure and anatomy as related to the profession.
<b>31502330 Salon Management Skills (2 cr.)</b>	Introduces the fundamental skills required for lawful and effective salon practice and management, including Wisconsin state laws and regulatory rules.
<b>31502331 Salon Theory and Ecology - Nail Technician (2 cr.)</b>	Learn theoretical concepts in microbiology and decontamination, general chemistry, electricity, nail 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. Explore personal development with an emphasis on healthy body and mind, communication and professional relationships.
<b>31502374 Nails (2 cr.)</b>	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.
<b>31502378 Cosmetology Sales &amp; Marketing (1 cr.)</b>	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.
<b>50502550 Barber Hair Care and Services for Women (2 cr.)</b>	Gain fundamental knowledge on hair care and develops skills required during draping, shampooing, and scalp massage procedures. In addition, the course examines the phases of hair growth, common hair disorders, causes and treatments for hair loss, and barber history. The final portion of the course explores women's haircutting and hairstyling guidelines established by the Wisconsin Statutes and Administrative Codes for barbers.

## Course Descriptions

<b>50502551 Barber Development and Services for Men (2 cr.)</b>	Examine diseases and disorders of the skin, shaving, men's facials, and men's hair cutting/styling as mandated by the Wisconsin Statutes and Administrative Codes for barbers. In addition, the course examines opportunities for lifelong learning and professional development.
<b>50502552 Barber Laws, Sanitation, and Science (2 cr.)</b>	Examine the rules and regulations for barbers in Wisconsin. In addition, the course explores safety, sanitation, disinfection, and infection control practices and procedures that are common to all aspects of the barbershop and salon. Apprentices will also examine the theory and concepts surrounding general sciences, chemical relaxing, and permanent waving as mandated by the Wisconsin Statutes and Administrative Codes for barbers.
<b>50502553 Barber Hair Color and Business Skills (2 cr.)</b>	Examine the theory requirements for hair coloring and bleaching as mandated by the Wisconsin Statutes and Administrative Codes for barbers. In addition, apprentices will develop fundamental skills needed to understand and communicate with people. A review of the Wisconsin laws and administrative codes that govern state barbers will be covered.
<b>50502750 Haircutting for Cosmetologists (1 cr.)</b>	Student learn basic haircutting procedures to include disinfection and proper use of tools.
<b>50502751 Cosmetology Laws and Rules (1 cr.)</b>	Focuses on laws and rules affecting barber cosmetology in the State of Wisconsin.
<b>50502752 Professional Development for Cosmetologists (1 cr.)</b>	Examines the policies and responsibilities of the Cosmetology profession. Learners apply practices related to maintaining a healthy mind and body, and in determining personal qualities related to health and human relations. Also focuses on developing personal life management.
<b>50502753 Cosmetology Salon Ecology (1 cr.)</b>	Focuses on different types organisms to prevent the spread of disease in a salon environment. Students explore basic safety and first aid methods in the salon.
<b>50502754 Hairstyling and Design for Cosmetologists (1 cr.)</b>	Focus will be on styling the hair to include fingerwaving, pincurling, roller-setting, blow-drying, thermal curling, thermal pressing, braiding, and long hairstyling. Product knowledge will be discussed. Safety and sanitation will be addressed.
<b>50502755 Cosmetology Hair and Scalp Care (1 cr.)</b>	Develop skills that relate to the chemistry of shampooing and conditioning products to human hair. Students identify the anatomy of the cranium, shoulders, and back as they relate to hair and scalp treatments. Students will integrate State of Wisconsin Administrative Codes related to infection control. Students will determine skill required in preparation for a hair and scalp treatment to include consultation skills, draping techniques, and the performance of a shampoo and scalp treatment service.

## Course Descriptions

<b>50502756 Trichology for Cosmetology (1 cr.)</b>	Focus will be on the structure of the hair root and hair shaft, including descriptions of the three layers of the hair. Discussion will include the chemical bonds that make up the hair and how the bonds are affected by the services performed in the salon. Hair and scalp disorders, diseases, and hair loss will be addressed.
<b>50502757 Hair Coloring for Cosmetologists (1 cr.)</b>	Focuses on the law of color, consultation skills, basic application techniques and formulation to safely and effectively perform a color service.
<b>50502758 Chemical Texturizing for Cosmetologists (1 cr.)</b>	Focuses on the theory of chemical texturizing and the application techniques and procedures related to permanent waving, chemical relaxing, and soft curl (curl reforming) permanent waves.
<b>50502759 Cosmetology Salon Industry &amp; Business Ops (0 cr.)</b>	Introduces the student to all the responsibilities of owning a salon. Students develop a personal career-building plan incorporating a variety of areas to help them reach success in the profession.
<b>50502760 Histology for the Skin for Cosmetology (1 cr.)</b>	Explores the structure, composition, and related glands of the skin. Students also characterize skin disease and disorders as contagious or non-contagious to protect themselves and their clients.
<b>50502761 Cosmetology Skin Care Services (1 cr.)</b>	This course covers skin care services to include facials, waxing, delegated medical procedures, e.g. microdermabrasion, electricity/light therapy, anatomy.
<b>50502762 Manicuring, Pedicuring and Artificial Nails (1 cr.)</b>	Applies techniques for basic manicures and pedicures. Artificial nails will also be addressed.
<b>50502763 Nail Structure and Related Disorders (1 cr.)</b>	Explores the structure and composition of the nail, nail diseases, nail disorders and conditions and the anatomy of the hand and arm.
<b>503 - Fire Technology</b>	
<b>10503103 Hazmat Awareness &amp; Operations (2 cr.)</b>	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.
<b>10503105 Technical Rescue (3 cr.)</b>	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.
<b>10503130 Fire Protection Internship (2 cr.)</b>	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.

## Course Descriptions

<b>10503135 Firefighter Functional Fitness (1 cr.)</b>	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.
<b>10503141 Firefighting Principles (3 cr.)</b>	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.
<b>10503142 Fire Fighting Principles (4 cr.)</b>	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.
<b>10503143 Building Construction for Fire Protection (3 cr.)</b>	This course 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.
<b>10503149 Hazardous Materials Technician (3 cr.)</b>	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.
<b>10503151 Fire Prevention (4 cr.)</b>	This course 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.
<b>10503156 Strategies, Tactics, and Incident Management Systems (4 cr.)</b>	Provides the principles of fire ground control through utilization of personnel, equipment, and extinguishing agents. Prepares students to pursue current national ICS training requirements.
<b>10503157 Fire Investigation (3 cr.)</b>	Provides learners with the fundamentals and technical knowledge needed for proper fire scene investigations.

## Course Descriptions

<b>10503191 Principles of Emergency Services (2 cr.)</b>	This course introduces the student to the organization and management of a fire and emergency services department and the relationship of government agencies to the fire service. Emphasis is placed on fire and emergency service, ethics, and leadership from the perspective of the company officer.
<b>10503192 Principles of Emergency Services Safety and Survival (3 cr.)</b>	This course introduces 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.
<b>10503193 Fire Protection Systems (3 cr.)</b>	This course 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.
<b>10503194 Fire Protection Hydraulics (3 cr.)</b>	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).
<b>10503195 Fire Behavior and Combustion (3 cr.)</b>	This course explores the theories and fundamentals of how and why fires start, spread, and are controlled.
<b>504 - Criminal Justice</b>	
<b>10504101 Basic Public Safety Drone Operations (2 cr.)</b>	Provides students the necessary knowledge to pass their FAA107 drone operation certification. Upon successful passing of the FAA107 certification students will demonstrate safe drone flying skills in mock public safety scenes.
<b>10504102 Crime Prevention Surveys (2 cr.)</b>	Conduct basic crime prevention surveys on smaller businesses to identify security-related vulnerabilities and recommended solutions. Students will learn the mechanics of completing a survey form and use the form for their surveys. Students will be required to identify 2-3 cooperating business entities to complete the requisite survey work.
<b>10504103 Cultural Diversity In Criminal Justice (3 cr.)</b>	Explore the impact of varied cultures on American policing, courts, and corrections.
<b>10504105 Basic Medicolegal Death Investigation (3 cr.)</b>	Based on the standards set by the American Board of Medicolegal Death Investigators (ABMDI) students will learn to investigate a death scene. Topics will include investigations from homicide to accidents to natural causes.
<b>10504106 Principles of Emergency Management (3 cr.)</b>	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.

## Course Descriptions

<b>10504108 Physical Security Applications (3 cr.)</b>	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.
<b>10504109 Electronic Security Applications (3 cr.)</b>	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.
<b>10504110 Introduction to Forensic Science (3 cr.)</b>	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.
<b>10504117 Employment Strategies in Public Safety (1 cr.)</b>	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.
<b>10504118 Security Life Safety (2 cr.)</b>	Learn those life safety issues that affect physical security hardware recommendations. Apply those principles to settings in the business world as they relate to current and recommended physical security hardware. Students will visit business establishments to view and identify related instructional units.
<b>10504119 Internship - Criminal Justice Studies (2 cr.)</b>	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.
<b>10504119GB Internship - Criminal Justice Studies (2 cr.)</b>	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.

## Course Descriptions

<b>10504120 Cultural Competence and Ethics in Criminal Justice (3 cr.)</b>	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.
<b>10504122 Biological &amp; Trace Evidence (3 cr.)</b>	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.
<b>10504122DE Biological &amp; Trace Evidence (3 cr.)</b>	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.
<b>10504123 Security Law (3 cr.)</b>	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.
<b>10504131 Basic Crime Scene Photography (3 cr.)</b>	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.

## Course Descriptions

### **10504142 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.

### **10504143 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.

### **10504146 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.

### **10504146DE 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.

### **10504147 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.

## Course Descriptions

<b>10504148 Asset Protection, Principles of (3 cr.)</b>	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.
<b>10504159 Crash Scene Investigation (3 cr.)</b>	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.
<b>10504168 Property/Evidence Management (2 cr.)</b>	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.
<b>10504169 Forensic Science Internship (1 cr.)</b>	Exposes the student to on-the-job situations and experiences in the forensic science arena that is dedicated to the education, enrichment and development of emerging forensic scientists and future leaders of the field. This provides an avenue for new forensic technicians to interact with and become part of the established forensic science community through placement locations in private; state and federal crime labs; and with local, state and federal law enforcement and corrections agencies.
<b>10504176 CCI: Computer Crime Investigation (2 cr.)</b>	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.
<b>10504178 CCI: Investigating Internet Crime (2 cr.)</b>	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

<b>10504179 CCI: Basic Data Recovery (2 cr.)</b>	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.
<b>10504180 Forensic Science Capstone (3 cr.)</b>	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.
<b>10504181 Public Safety Fitness and Wellness (3 cr.)</b>	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.
<b>10504187 Homeland Security Management (3 cr.)</b>	Introduces students to the Department of Homeland Security at the federal, state and local level. The management application of responsibilities and resources of various homeland security components related private security and public safety will be studied using actual case analysis.
<b>10504190 Community Crime Prevention (1 cr.)</b>	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.
<b>10504192 Crime Prevention Planning (3 cr.)</b>	Learn techniques to solve crime-related challenges in the community and create partnerships in crime prevention. Techniques for problem solving, engaging community members, building cohesiveness and dealing with diversity will be addressed.
<b>10504194 Forensic Anthropology, Intro to (3 cr.)</b>	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.

## Course Descriptions

<b>10504200 Criminal Justice Issues Capstone (2 cr.)</b>	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.
<b>10504201 Introduction to Corrections (3 cr.)</b>	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.
<b>10504203 Crime Prevention Principles (3 cr.)</b>	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.
<b>10504204 Criminal Justice System (3 cr.)</b>	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.
<b>10504205 Writing Reports (3 cr.)</b>	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.
<b>10504207 Communicating Professionally (3 cr.)</b>	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.
<b>10504208 Criminal Procedures (3 cr.)</b>	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.

## Course Descriptions

- 10504209 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.
- 10504210 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.
- 10504211 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.
- 10504930 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10504931 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10504932 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10504933 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10504934 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10504935 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10504936 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 30504500 Overview of Patrol Response (2 cr.)** Through classroom lecture, and on-campus lab, and WI Department of Justice integration exercises students will learn and apply skills addressed in the following WI Department of Justice 720 Academy curriculum framework Phase I topics: Critical Thinking and Decision-Making, Basic Response (RESPOND), Radio Procedures, Introduction to TraCS, Traffic Law Enforcement I, First Aid, CPR/AED, and Naloxone/Narcan, and Physical Fitness. This course will also include the WI DOJ 720 Academy Integration Exercises.

## Course Descriptions

- 30504501 Physical Fitness (1 cr.)** Through classroom lecture and on-campus lab students will apply Phases I-III Physical Fitness WI Department of Justice 720 Academy curriculum framework program requirements and Officer Wellness Suicide Prevention.
- 30504502 Application of Investigations (1 cr.)** Through classroom lecture, on-campus lab, and WI Department of Justice 720 Academy integration exercises students will learn and apply skills addressed in the following Phase III topics of the Department of Justice 720 Academy curriculum framework: Ethics II: Moral Reasoning and Professional Conduct, Cultural Competence II, Interrogations, Testifying in Court, Crimes III and Physical Evidence Collection.
- 30504503 Overview of Criminal Justice (1 cr.)** Through classroom lecture and WI Department of Justice 720 Academy integration exercises, students will learn and apply skills addressed in the following WI Department of Justice 720 Academy Phase I curriculum framework topics: Academy Orientation, Fundamentals of Criminal Justice, Ethics I, Cultural Competence, Agency Policy, and Professional Communication Skills I.
- 30504504 Principles of Emergency Vehicle Response (2 cr.)** Through classroom lecture, and on-campus lab, and WI Department of Justice 720 Academy integration exercises students will learn and apply skills addressed in the following Department of Justice 720 Academy Phase II topics: Emergency Vehicle Operation and Control (EVOC) and Vehicle Contacts II.
- 30504505 Sensitive Crimes (2 cr.)** Through classroom lecture, and on-campus lab and WI Department of Justice 720 Academy integration exercises, students will learn and apply skills addressed in the following Department of Justice 720 Academy curriculum framework Phase III topics: Domestic Violence, Juvenile Law, Victims, Sexual Assault, and Child Maltreatment. The DOJ Phase III Written Examination will be administered in this course.
- 30504506 Overview of Investigations (2 cr.)** Through classroom lecture, on-campus lab, and WI Department of Justice 720 Academy integration exercises students will learn and apply skills addressed in the following Department of Justice 720 Academy curriculum framework Phase I topics: Constitutional Law I, Crimes I, Interviews, and Report Writing I. The DOJ Phase I Written Examination will be administered in this course.

## Course Descriptions

<b>30504507 Application of Traffic Response (3 cr.)</b>	Through classroom lecture, and on-campus lab and WI Department of Justice integration exercises, students will learn and apply skills addressed in the following Phase III topics from the WI Department of Justice 720 Academy curriculum framework: Traffic Law Enforcement - Core and Radar, Traffic Crash Investigations & Incident Management, Operating a Motor Vehicle While Intoxicated (OMVWI), Standardized Field Sobriety Tests (SFST), Hazardous Materials and Weapons of Mass Destruction (WMD), Incident Command Systems and NIMS, and Report Writing.
<b>30504508 Principles of Investigations (1 cr.)</b>	Through classroom lecture, and on-campus lab, and WI Department of Justice 720 Academy integration exercises students will learn and apply skills addressed in the following Phase II topics of the WI Department of Justice 720 Academy curriculum framework: Constitutional Law II, Physical Evidence Collection, and Crisis Management. The Phase II Written Exam will be given in this course.
<b>30504509 Principles of Tactics (5 cr.)</b>	Through classroom lecture and on-campus lab and integration exercises, students will learn and apply skills addressed in the following Phase II topics from the Department of Justice 720 Academy curriculum frameworks including: Professional Communication Skills II, DAAT, Firearms II, Tactical Response, and Tactical Emergency Critical Care For Law Enforcement Officers.
<b>30504510 Overview of Tactics (1 cr.)</b>	Through classroom lecture, and on-campus lab and WI Department of Justice 720 Academy integration exercises, students will learn and apply skills addressed in the following Department of Justice 720 Academy curriculum framework Phase I topics: Fundamentals of Firearms, Vehicle Contacts I, Officer Wellness I, and DAAT I.
<b>30504511 Scenario Assessment (1 cr.)</b>	A capstone course to assess the learner's cumulative knowledge through the use of scenarios in the Law Enforcement Academy curriculum.
<b>506 - Environmental</b>	
<b>10506101 Beginning Laboratory Science (3 cr.)</b>	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.
<b>10506103 Advanced Laboratory Science (3 cr.)</b>	The learner will do extensive testing and analysis of samples. The learner will conduct research, studies and experiments specific to their area of focus.

## Course Descriptions

<b>10506105 Environmental Lab Science Theory (2 cr.)</b>	This course is a companion to Environmental Lab Science Lab and provides a framework for understanding the interrelationship with our environment. The learner will explore the nature and process of science as it applies to environmental science. The learner will examine environmental public policy, biogeochemical cycles, community ecology, the hydrologic cycle, soil ecosystems, solid waste management and environmental health issues.
<b>10506106 Environmental Lab Science Lab (1 cr.)</b>	Learner will begin to apply laboratory procedures and the scientific method to the analysis of samples and the performance of simple experiments. Lab techniques: BOD, calibration, dissolved oxygen, dissolved solids, water testing, pathogen testing.
<b>10506112 Paper and Packaging Testing Procedures (2 cr.)</b>	Introduces learners to common paper, disposable consumer products, non-woven and packaging industry tests. Practice of qualitative and quantitative chemical tests such as alkalinity and pH, basic strength measurements such as grammage, tensile, stiffness, and burst. Measurement of optical properties such as color, brightness, and opacity, is also practiced.
<b>10506113 Instrumentation (2 cr.)</b>	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.
<b>10506121 Food Laboratory Science Theory (2 cr.)</b>	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.
<b>10506125 Food Laboratory Science Lab (1 cr.)</b>	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.
<b>10506135 Lab Science Internship (3 cr.)</b>	Integrates previous classroom study with specific off campus occupational experiences at selected training sites. An organized plan of experiences built around occupational competencies are planned, supervised and evaluated by the instructor and cooperating business trainer. Instructor consent required.

## 508 - Dental

## Course Descriptions

<b>10508101 Dental Health Safety (1 cr.)</b>	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. This course is a WTCS aligned course required in both the Dental Hygienist and Dental Assisting programs.
<b>10508102 Oral Anatomy, Embry, Histology (4 cr.)</b>	Prepares Dental Hygienist students to apply detailed knowledge about oral anatomy to planning, implementation, assessment, and evaluation of patient care. Students identify distinguishing characteristics of normal and abnormal dental, head, and neck anatomy and its relationship to tooth development, eruption, and health.
<b>10508103 Dental Radiography (2 cr.)</b>	Prepares dental auxiliary students to operate radiographic equipment and expose bitewing, periapical, extra oral, and occlusal images. Emphasis is placed on protection against x-ray hazards. Students also produce, mount, and evaluate dental images for diagnostic value. This course also provides the background in radiographic theory required for students to make informed decisions and adjustments.
<b>10508105 Dental Hygiene Process 1 (4 cr.)</b>	Introduces Dental Hygiene students to the basic technical/clinical skills required of practicing Dental Hygienists including use of basic dental equipment, examination of patients, and procedures within the dental unit. Under the direct supervision of an instructor, students integrate hands-on skills with entry-level critical thinking and problem-solving skills. The course also reinforces the application of Dental Health Safety skills.
<b>10508106 Dental Hygiene Process 2 (4 cr.)</b>	This clinical course builds on and expands the technical/clinical skills student dental hygienists began developing in Dental Hygiene Process 1. Under the direct supervision of an instructor, students apply patient care assessment, planning, implementation, and evaluation skills to provide comprehensive care for calculus case type 1 and 2 patients and perio case patients. Dental Hygiene Process 2 introduces the application of fluoride and desensitizing agents, whole mouth assessments, comprehensive periodontal examinations, application of sealants, and patient classification. Students also begin performing removal of supragingival stain, dental plaque, calcified accretions, and deposits. In addition, they gain further experience in exposing radiographs on patients. The course also reinforces the application of Dental Health Safety skills.

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<b>10508107 Dental Hygiene Ethics &amp; Professionalism (1 cr.)</b>	Helps student dental hygienists develop and apply high professional and ethical standards. Students apply the laws that govern the practice of dental hygiene to their work with patients, other members of a dental team and the community. Emphasis is placed on maintaining professionalism which includes confidentiality and informed consent.
<b>10508108 Periodontology (3 cr.)</b>	This course prepares student dental hygienists to assess the periodontal health of patients, plan prevention and treatment of periodontal disease, and to evaluate the effectiveness of periodontal treatment plans. Emphasis is placed on the recognition of the signs and causes of periodontal disease and on selection of treatments modalities that minimize risk and restore periodontal health.
<b>10508109 Cariology (1 cr.)</b>	This course focuses on the characteristics and contributing factors of dental decay. Dental Hygiene students help patients minimize caries risk by developing treatment plans, communicating methods to patients, and evaluating treatment results.
<b>10508110 Nutrition and Dental Health (2 cr.)</b>	Prepares student dental hygienists to counsel patients about diet and its impact on oral health. Students learn to distinguish between balanced and unbalanced diets and to construct diets that meet the needs of patients with compromised dental/oral health. Students also learn to counsel patients about the effect of eating disorders on dental health.
<b>10508111 General &amp; Oral Pathology (3 cr.)</b>	This course prepares the student dental hygienist to determine when to consult, treat or refer clients with various disease, infection or physiological conditions. Students learn to recognize the signs, causes, and implications of common pathological conditions including inflammatory responses, immune disorders, genetic disorders, developmental disorders of tissues and cysts, oral tissue trauma, and neoplasm of the oral cavity.
<b>10508112 Dental Hygiene Process 3 (5 cr.)</b>	This clinical course builds on and expands the technical/clinical skills student dental hygienists developed in Dental Hygiene Process 2. In consultation with the instructor, students apply independent problem-solving skills in the course of providing comprehensive care for calculus case type 1, 2, and 3 patients and case type 0, I, II, and III patients. Dental Hygiene Process 3 introduces root detoxification using hand and ultra-sonic instruments, laser bacterial reduction, selection of dental implant prophylaxis treatment options, and administration of chemotherapeutic agents. Students also adapt care plans in order to accommodate patients with special needs.

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<b>10508113 Dental Materials (2 cr.)</b>	Prepares dental auxiliary 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.
<b>10508114 Dental Pharmacology (2 cr.)</b>	Prepares student dental hygienists to select safe and effective patient premedication and within the scope of dental hygiene practice. Students will also learn to recognize potential pharmacological contraindications for specific patients and to take measures to avoid negative impact or alert other members of the dental team to possible negative impact.
<b>10508115 Community Dental Health (2 cr.)</b>	This course prepares the Dental Hygienist student to play a proactive role in improving the dental health of community members of all ages. Students perform and interpret dental health research to determine community dental health needs.
<b>10508117 Dental Hygiene Process 4 (4 cr.)</b>	This clinical course builds on and expands the technical/clinical skills student dental hygienists developed in Dental Hygiene Process 3. With feedback from the instructor, students manage all aspects of cases in the course of providing comprehensive care for calculus case type 0, 1, 2, and 3 patients and for case type 0 I, II, and III patients. Emphasizes maximization of clinical efficiency and effectiveness. Prepares student dental hygienists to demonstrate their clinical skills in a formal examination situation.
<b>10508118 Dental Anxiety and Pain Management (2 cr.)</b>	This course prepares the student dental hygienist to work within the scope of dental hygiene practice to manage anxiety and pain for dental patients. Students learn to prepare and administer local anesthesia and nitrous oxide safely. The course also addresses the recommendation of alternative pain control measures.
<b>10508120 Dental Office Management (2 cr.)</b>	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. Students use dental software programs.
<b>10508121 EFDA Dental Procedures (3 cr.)</b>	Learn how to perform the placement and finishing of restorative materials after the dentist prepares a tooth for restoration. Includes the application of sealants and temporizations.

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<b>10508122 EFDA Preventative Procedures (1 cr.)</b>	Examine the role of the Expanded Function Dental Auxiliary in WI. Learn how to provide preventative procedures performed by the EFDA including coronal polishing and application of topical fluoride, fluoride varnish, or similar dental topical agents.
<b>10508123 EFDA Prosthodontic Procedures (2 cr.)</b>	Learn how to perform dental prosthodontic procedures including adjustment of dentures and other removable oral appliances, impressions, packing cord, and removal of sutures and dressings.
<b>10508124 EFDA Clinical (2 cr.)</b>	Expanded Functions Dental Auxiliary students apply skills developed in Preventative Procedures, Restorative Procedures and Prosthodontic Procedures in a clinical setting with patients under the direct supervision of a dentist.
<b>10508130 Dental Hygiene, Transition into Practice (1 cr.)</b>	Prepares students for the written licensing and clinical practice examinations. It includes simulated, written and practical exams; an individualized study plan; stress/test anxiety management strategies; and dental hygiene licensing.
<b>31508302 Dental Chairside (5 cr.)</b>	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.
<b>31508304 Dental &amp; General Anatomy (2 cr.)</b>	Prepares dental assistant students to apply fundamentals of general and dental anatomy to informed decision-making and to professional communication with colleagues and patients.
<b>31508306 Dental Assistant Clinical (3 cr.)</b>	Students apply skills developed in Dental and General Anatomy, Dental Health Safety, Dental Chairside, Dental Materials, Dental Radiography, and Professionalism in a clinical setting with patients. Emphasizes integration of core abilities and basic occupational skills.
<b>31508307 Dental Assistant Professional (1 cr.)</b>	Prepares dental assistant students for entering the workforce. Students develop professional appearance and prepare a resume, cover letter, and professional development plan. Students learn to work within ethical guidelines and legal frameworks.
<b>31508308 Dental Chairside - Advanced (5 cr.)</b>	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.

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<b>31508309 Dental Laboratory Procedures (4 cr.)</b>	Prepares Dental Assistant students to produce alginate impressions and fabricate diagnostic models, oral appliances, temporary restorations, and custom trays. Students also polish oral appliances.
<b>31508310 Dental Radiography - Advanced (1 cr.)</b>	Builds on principles and skills developed in Dental Radiography. Dental Assisting students produce full mouth series, extra-oral and specialized images on adult and child patients. Emphasis is placed on protection against radiation exposure risks. Students will also produce, mount, and evaluate images of diagnostic quality. In addition, they will use images to explain dental health and treatment plans to patients.
<b>31508311 Dental Assistant Clinical - Adv (2 cr.)</b>	Dental Assisting students apply skills developed in Dental Chairsides - Advanced, Dental Lab Procedures, Dental Radiography - Advanced, and Dental Office Management in a clinical setting with patients. Emphasizes integration of core abilities and basic and advanced occupational skills.
<b>509 - Medical Assistant</b>	
<b>31509301 Medical Asst Admin Procedures (2 cr.)</b>	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.
<b>31509302 Human Body in Health &amp; Disease (3 cr.)</b>	Students learn to recognize human body structure and function in health and disease states. Students explore the causes, signs, and symptoms of diseases of the major body systems as well as the diagnostic procedures, usual treatment, prognosis, and prevention of diseases commonly diagnosed and treated in the medical office setting.
<b>31509303 Medical Asst Lab Procedures 1 (2 cr.)</b>	Introduces medical assistant students to laboratory procedures commonly performed by medical assistants in a medical office setting. Students perform Clinical Laboratory Improvement Amendment (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.
<b>31509304 Medical Asst Clin Procedures 1 (4 cr.)</b>	Introduces medical assistant students to the 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. Learner explores communication principles and psychology theories related to patient care.

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<b>31509305 Medical Asst Lab Procedures 2 (2 cr.)</b>	Prepares students to perform phlebotomy and Clinical Laboratory Improvement Amendment (CLIA) waived hematology, chemistry, immunology and laboratory procedures commonly performed by medical assistants in the ambulatory care setting.
<b>31509306 Medical Asst Clin Procedures 2 (3 cr.)</b>	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, coaching patients, and assisting with emergency situations in an ambulatory care setting. Students learn preventive care and principles of nutrition.
<b>31509307 Med Office Insurance &amp; Finance (2 cr.)</b>	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.
<b>31509308 Pharm for Allied Health (2 cr.)</b>	Introduces students to medication classification, basic pharmacology principles, and supplements. Students apply basic pharmacodynamics to identify common medications and calculate dosages in preparation for medication administration.
<b>31509309 Medical Law, Ethics &amp; Profess (2 cr.)</b>	Prepares students to display professionalism and perform within ethical and legal boundaries in the health care setting. Students maintain confidentiality, examine legal aspects of ambulatory healthcare, perform quality improvement procedures, examine legal and bioethical issues, and demonstrate awareness of diversity.
<b>31509310 Medical Assistant Practicum (3 cr.)</b>	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.
<b>31509311 Medical Assistant Scribe Specialist (2 cr.)</b>	Allows current Medical Assistants to advance their careers as a scribe. By providing health data management in real time, the learner acquires skills to assist with patient documentation. The MA Medical Scribe is trained in health record documentation and the use of health information technology to support it.

## Course Descriptions

<b>31509320 Medical Terminology for Medical Assistants (2 cr.)</b>	Focuses on the component parts of medical terms, including prefixes, suffixes, and word roots used by medical assistants. Emphasizes spelling, definition, and pronunciation of medical terms, and utilization of abbreviations to be able to communicate effectively with healthcare professionals and deliver quality care. Students learn medical terms to identify basic anatomy, physiology, and pathophysiology amongst body systems. Students engage in collaborative activities to build competence utilizing medical terminology.
<b>31509340 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>31509341 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>512 - Surgical Technician</b>	
<b>10512125 Intro to Surgical Technology (4 cr.)</b>	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.
<b>10512126 Surgical Tech Fundamentals 1 (4 cr.)</b>	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.
<b>10512127 Exploring Surgical Issues (2 cr.)</b>	Explores a variety of issues related to surgical technology. Emphasis is placed on becoming a professional member of the surgical team.
<b>10512128 Surgical Tech Fundamentals 2 (4 cr.)</b>	Focuses on enhancing surgical technology skills while functioning as a sterile team member. Lab is included.
<b>10512129 Surgical Pharmacology (2 cr.)</b>	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.
<b>10512130 Surgical Skills Application (2 cr.)</b>	Provides a transition from the academic to the clinical setting. Learners integrate the surgical technologist skills as they apply to various surgical procedures.
<b>10512131 Surgical Interventions 1 (4 cr.)</b>	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.
<b>10512132 Surgical Technology Clinical 1 (3 cr.)</b>	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.
<b>10512133 Surgical Technology Clinical 2 (3 cr.)</b>	Further experience in a clinical setting allows the student to continue to improve technical skills while accepting more responsibilities during surgical procedures.

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- 10512135 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.
- 10512136 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.
- 10512142 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**
- 10513109 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.
- 10513110 Basic Lab Skills (1 cr.)** Explores laboratory science career options and the fundamental principles and procedures performed in the laboratory. You will utilize medical terminology and basic laboratory equipment. You will follow required safety and infection control procedures and perform simple laboratory tests.
- 10513111 Phlebotomy (2 cr.)** Provides opportunities for learners to perform routine venipuncture, routine capillary puncture and special collection procedures.
- 10513113 QA Lab Math (1 cr.)** 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.
- 10513114 Urinalysis (2 cr.)** 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.
- 10513115 Basic Immunology Concepts (2 cr.)** Provides an overview of the immune system including laboratory testing methods for diagnosis of immune system disorders, viral and bacterial infections.
- 10513116 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. Additional topics include hepatic, cardiac markers, tumor markers, endocrine function, miscellaneous body fluids, toxicology, enzymes and electrolytes.
- 10513117 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.

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<b>10513118 Medical Laboratory Assistant Clinical (3 cr.)</b>	Learn to prepare blood specimen collection and specimen processing in a clinical setting.
<b>10513120 Basic Hematology (3 cr.)</b>	Covers the theory and principles of blood cell production and function, and introduces you to basic practices and procedures in the hematology laboratory.
<b>10513121 Coagulation (1 cr.)</b>	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.
<b>10513130 Advanced Hematology (2 cr.)</b>	Explores mechanisms involved in the development of hematological disorders. Emphasis is placed upon laboratory techniques used to diagnose disorders and monitor treatment.
<b>10513133 Clinical Microbiology (4 cr.)</b>	Presents the clinical importance of infectious diseases with emphasis upon the appropriate collection, handling and identification of clinically relevant bacteria. Disease states, modes of transmission and methods of prevention and control, including antibiotic susceptibility testing, will also be discussed.
<b>10513140 Advanced Microbiology (2 cr.)</b>	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.
<b>10513151 Clinical Experience 1 (3 cr.)</b>	Practice the principles and procedures of laboratory medicine as an entry level Medical Laboratory Technician (MLT) in a clinical laboratory setting. Working alongside laboratory professionals, you will collect and process specimens, operate laboratory analyzers and instruments and report results in a Laboratory Information Systems.
<b>10513152 Clinical Experience 2 (4 cr.)</b>	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.
<b>10513170 Introduction to Molecular Diagnostics (2 cr.)</b>	Introduces the principles and application of molecular diagnostics in the clinical laboratory.
<b>514 - Occupational Therapy Assistant</b>	
<b>10514171 Introduction to Occupational Therapy (3 cr.)</b>	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.
<b>10514172 Medical and Psychosocial Conditions (3 cr.)</b>	Introduces medical and psychosocial conditions as they relate to occupational therapy practice. Topics include etiology, symptomatology, treatment and contraindications.

## Course Descriptions

<b>10514173 Activity Analysis and Applications (2 cr.)</b>	A foundational course introducing students to the principles of activity analysis using the occupational therapy practice framework. Students learn to analyze and adapt activities to enhance client participation, performance, and independence. Emphasis is placed on developing critical thinking, therapeutic use of self, and intervention planning.
<b>10514174 OT Performance Skills (4 cr.)</b>	Emphasis on assessment in the areas of sensory perceptual skills, motor skills, and cognitive skills.
<b>10514175 Psychosocial Practice (3 cr.)</b>	Examines the role of the OTA in the service delivery to individuals affected by mental health conditions. Provides opportunity for development of skills related to psychosocial assessment and interventions.
<b>10514176 OT Theory and Practice (3 cr.)</b>	Examines the theoretical foundations that guide OT practice. Apply group dynamics, group process, and leadership skills. Use evidence-based practice to guide the OT process.
<b>10514178 Geriatric Practice (3 cr.)</b>	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.
<b>10514179 Community Practice (2 cr.)</b>	Explores practice options and interventions for occupation-based community practice. Students articulate the unique role of occupational therapy within the community.
<b>10514184 OTA Fieldwork I (2 cr.)</b>	Integrate classroom theory and practice into a Fieldwork Level I experience which may be virtual, simulated, faculty led, or community based. Provides experiences to assist in the development of communication, professional and observational skills.
<b>10514185 OTA Practice and Management (2 cr.)</b>	Provides opportunities to practice clinical management skills, continuous quality improvement measurement, and administrative concepts and procedures. Students create a professional development plan.
<b>10514186 OTA Fieldwork IIA (5 cr.)</b>	Develop skills and behaviors necessary for entry-level occupational therapy assistant practice. Provides a different clinical practice setting than OTA Fieldwork IIB.
<b>10514187 OTA Fieldwork IIB (5 cr.)</b>	Develop skills and behaviors necessary for entry level occupational therapy assistant practice. Provides a different clinical practice setting than OTA Fieldwork IIA.
<b>10514189 OT Physical Rehabilitation Practice (4 cr.)</b>	Explores interventions relative to major physical disability diagnoses seen in OT practice. Evaluation, treatment interventions, assistive technology and documentation are emphasized relative to the biomechanical, neurodevelopmental and rehabilitative approaches to practice.
<b>10514190 OT Pediatric Practice (4 cr.)</b>	Explores interventions relative to major pediatric diagnoses seen in OT practice. Evaluation, treatment interventions, assistive technology and documentation are emphasized within the context of the child's occupations.

## Course Descriptions

<b>30514301 Introduction to Activity Specialist (3 cr.)</b>	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.
<b>30514302 Conditions Across the Lifespan (3 cr.)</b>	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.
<b>30514303 Activity Program Coordination (3 cr.)</b>	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.
<b>30514304 Activity Facilitation I (3 cr.)</b>	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.
<b>30514305 Activity Facilitation II (3 cr.)</b>	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.
<b>30514306 Activity Specialist Capstone (2 cr.)</b>	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.
<b>520 - Human Services</b>	
<b>10520105 Personal/Professional Development (1 cr.)</b>	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.
<b>10520991 Elective: Human Services (1 cr.)</b>	Elective: Human Services
<b>522 - Educational Services</b>	

## Course Descriptions

- 10522102 EDU: Techniques in Reading (3 cr.)** The purpose of this course is to provide students with a solid foundation for effective literacy instruction in K – 9 grade classrooms. The course will focus on the major five elements of reading: phonemic awareness, phonics, vocabulary, fluency, and comprehension. Phonological Awareness will also be addressed. This course will review research-based teaching strategies, instructional materials as well as methods and assessments for effective and inclusive literacy instruction.
- 10522103 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.
- 10522104 EDU: Technology in Education (3 cr.)** The focus of this course is for students to teach and learn with information and technology rather than about information and technology. The Wisconsin Department of Public Education (DPI) states that “Information and Technology Literacy is the ability of a teacher, working independently or with others, to use tools, resources, processes, and systems responsibly to access and evaluate information in any medium, and to use that information to solve problems, communicate clearly, make informed decisions, and construct new knowledge, products, or systems.” Students will analyze all aspect of information and technology literacy as well as begin their digital professional teaching portfolio.
- 10522105 EDU: Behavior Management (3 cr.)** Students analyze the behavior of students in educational settings. Emphasis will be given to examining the influences on behavior and creating proactive learning environments through behavioral interventions and support. Students will evaluate strategies for creating a safe and supportive classroom environment.
- 10522106 EDU: Child and Adolescent Development (3 cr.)** Students will analyze the physical, cognitive and social-emotional development of children with an emphasis on school age children and adolescents. Students will examine environmental factors that influence child development. Developmental theories will be summarized and related to current teaching practices.

## Course Descriptions

### **10522107 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.

### **10522112 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.

### **10522114 EDU: Techniques in Language Arts (3 cr.)**

Students will be introduced to the science and art of teaching language arts. Evidence-based approaches and assessments will be examined and practiced. Students will create a literature file through the exploration of a variety of children's/young adult literature.

### **10522118 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.

### **10522119 EDU: Techniques in Social Studies (3 cr.)**

Students analyze current content in social studies education as recommended by the National Council for Social Studies and Wisconsin DPI. Students design learning opportunities for the five content areas of social studies: Geography, History, Behavioral Sciences (Culture and Society), Political Science (Civics and Government), and Economics that incorporate the social studies inquiry practices and processes. Students receive training on the history, culture, and tribal sovereignty of Wisconsin's eleven federally recognized American Indian nations and tribal communities (Act 31) and the Holocaust and other genocides (Act 30) to meet Wisconsin teacher standards and teaching requirements.

## Course Descriptions

<b>10522120 EDU: Techniques in Science (3 cr.)</b>	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 practice strategies for assisting with group and individual activities in science. This course provides a 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 (NGSS).
<b>10522124 EDU: Supporting Students with Disabilities (3 cr.)</b>	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.
<b>10522129 EDU: Practicum 1 (3 cr.)</b>	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.
<b>10522131 EDU: Practicum 2 (3 cr.)</b>	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.
<b>10522141 Intro to Career &amp; Technical Education Inst. (1 cr.)</b>	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.
<b>10522142 Occupational Co-op (1 cr.)</b>	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

- 10522143 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.
- 10522144 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.
- 10522145 Technical Education Field Experience 1 (2 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.
- 10522146 Technical Education Field Experience 2 (2 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.

## Course Descriptions

**10522150 EDU: Intro to Family & Consumer Sciences Education (3 cr.)**

Covers the history of Family and Consumer Sciences (FCS) education, current trends, and the future of the field. Students will gain a broad understanding of curricular framework, course development methodology, FCS education philosophy, and how FCS areas such as baking, culinary, education, and interior design fit into the broader aspect of K-12 education.

**10522151 EDU: Family and Consumer Sciences Industry Co-Op (1 cr.)**

Provides students with professional experience in an occupational field related to Family and Consumer Sciences. Participants in this course are responsible for gaining employment in a baking, culinary, hospitality, interior design, or an early childhood related field.

**10522152 EDU: Family and Consumer Sciences Practicum 1 (2 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.

**10522153 EDU: Family and Consumer Sciences Practicum 2 (2 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.

### **525 - Electroencephalograph Asst**

**10525101 NDT: EEG Basic (3 cr.)**

Discover the captivating world of Electroencephalography (EEG) through our comprehensive course designed to provide a solid foundation in EEG measurement, recording, and interpretation. This program is tailored for aspiring EEG technologists, and students seeking to delve into the intricacies of brain wave patterns and their clinical applications. Through interactive lectures, hands-on demonstrations, and engaging case studies, students cultivate the expertise needed to perform EEG measurements, interpret waveforms, and contribute to accurate clinical assessments.

**10525102 NDT: Neuroanatomy (3 cr.)**

Examines the intricate world of neural anatomy and pathways. Students explore neural tissue, muscle tissue, spinal cord function, sensory and motor pathways, and the complexities of the brain and cranial nerves. Through engaging multimedia content and interactive quizzes, students acquire a comprehensive understanding of neural tissue, neural-muscular interactions, the spinal cord, sensory and motor pathways, and the complexities of the brain and cranial nerves, allowing students to grasp the intricacies of the nervous system and its vital role in human function.

## Course Descriptions

### **10525103 NDT: Nerve Conduction Studies Basic (3 cr.)**

Embark on a comprehensive journey through the intricacies of nerve conduction studies (NCS) with our specialized course. Designed for aspiring neurodiagnostic technologists, this program offers a deep dive into nerve conduction electronics, instrumentation, and the nuances of conducting accurate and meaningful studies. Throughout this course, students engage in hands-on practice, interactive sessions, and case studies to reinforce understanding of nerve conduction studies. Our experienced instructor will guide you in interpreting complex nerve conduction patterns, troubleshooting technical challenges, and honing clinical judgment.

### **10525104 NDT: EEG Advanced (4 cr.)**

Examines epilepsy and electroencephalography (EEG) monitoring, unravels the intricacies of abnormal EEG activity, and explores cutting-edge treatments for epilepsy. Students gain a solid foundation in the field and its clinical applications. Throughout this course, students engage in case studies and practical scenarios, enhancing their ability to assess and manage epilepsy and abnormal EEG activity. At the course's conclusion, students possess a comprehensive understanding of epilepsy, EEG monitoring, and multifaceted strategies for improving patient outcomes.

### **10525105 NDT: Evoked Potentials Basic (2 cr.)**

This comprehensive course delves into the intricacies of visual, auditory, and somatosensory evoked potentials, equipping students with the knowledge and skills to navigate these diagnostic tools effectively. Throughout the course, students engage in a dynamic blend of theoretical learning and practical applications. Our expert instructor will guide students through the techniques, electrode placements, recording methodologies, and data interpretation required for each type of evoked potential. Gain hands-on experience in acquiring and analyzing evoked potentials data, enhancing student proficiency in clinical neurophysiology.

### **10525107 NDT: Theory (3 cr.)**

Delves into a wide spectrum of neurological disorders and brain abnormalities, provides thorough examination of their causes, manifestations, diagnostic methods, and potential treatment approaches. Students learn about strokes and arrhythmias to episodic disorders of consciousness, and gain insight into the intricate world of the human brain and its various complexities. Throughout this course, students will engage with expert insights to develop a comprehensive understanding of neurological disorders and brain abnormalities. By the end of the course, students will be equipped with valuable knowledge to contribute to the field of neurology and enhance patient care.

## Course Descriptions

- 10525109 NDT: Nerve Conduction Study Advanced (3 cr.)** Examines nerve conduction studies and neuromuscular disorders. Students learn the nuances of uncommon nerve conduction studies, the complexities of various nerve injuries, neuromuscular conditions, and gain a deep understanding of advanced concepts in clinical neurophysiology. Throughout this course, students engage in hands-on exercises, case studies, and interactive discussions, honing their ability to perform and understand specialized nerve conduction studies.
- 10525116 NDT: Introduction to Practicum (2 cr.)** Examines the introductory understanding of neurodiagnostic practices through a combination of focused observation and limited hands-on opportunities. Students gain foundational insight into neurodiagnostic practices before pursuing more extensive hands-on training.
- 10525117 NDT: Practicum 1 (3 cr.)** Embark on an immersive journey into the realm of neurodiagnostics through this comprehensive clinical rotation. Designed to provide hands-on experience under direct supervision, this clinical offers a dynamic and practical learning opportunity for aspiring neurodiagnostic professionals. Throughout this clinical rotation, students actively participate in conducting tests, recording data, interacting with patients, and collaborating with multidisciplinary healthcare teams. Students' skills are honed under the guidance of experienced neurodiagnostic professionals, ensuring a well-rounded and immersive learning experience.
- 10525118 EEG Symposium (1 cr.)** Unlock the intricacies of challenging EEG topics and elevate expertise in neurodiagnostics with our immersive course. Designed for neurodiagnostic students seeking to enhance their EEG proficiency, this comprehensive program focuses on identifying, re-evaluating, and applying knowledge to tackle complex EEG scenarios. Through a blend of interactive lectures, collaborative discussions, and practical case simulations, students gain the confidence to navigate challenging EEG topics with precision. Our instructors will guide you in honing the ability to understand intricate EEG patterns, identify artifacts, and make informed clinical decisions.

## Course Descriptions

### **10525119 Intro to Intraoperative Neuromonitoring (1 cr.)**

Examines the dynamic field of intraoperative neuromonitoring. Students expand their expertise in neurodiagnostics, in a focused exploration of intraoperative monitoring techniques in the context of carotid endarterectomy, epilepsy surgery, and spinal cord procedures. Through engaging lectures, case studies, and interactive simulations, students acquire practical skills and knowledge in utilizing EEG monitoring for carotid endarterectomy, epilepsy surgery, and spinal cord procedures. Our instructors will guide you through the nuances of intraoperative neuromonitoring, enabling you to confidently contribute to enhanced patient care and surgical success.

### **10525120 NDT: Practicum 2 (5 cr.)**

Embark on an enriching hands-on clinical rotation into the dynamic world of neurodiagnostics with our comprehensive, indirectly supervised, clinical rotation. This immersive program is designed to provide students with a robust and practical understanding of neurodiagnostic techniques, enabling students to excel in this vital field of healthcare. By the end of this program, students emerge as confident and skilled neurodiagnostic entry-level technologists, equipped with the knowledge and practical expertise necessary to excel in the dynamic field of neurodiagnostics.

### **10525121 Principles of Polysomnography (2 cr.)**

Embark on a comprehensive exploration of sleep technology and disorders in our dynamic course designed to equip students with a strong foundation in this vital field. Through a dynamic blend of lectures, interactive discussions, case studies, and practical exercises, students emerge well-equipped to navigate the multifaceted field of sleep technology.

## **530 - Health Information**

### **10530120 Intro to Medical Reimbursement (2 cr.)**

Investigates key trends that impact healthcare costs and reimbursement systems, including prospective payment methods and value-based purchasing. Learners compare government and non-government payers, explore payment methods, and apply systems to maximize reimbursement. Additionally, learners will gain skills in managing claim processes and advocating for patients navigating healthcare services.

### **10530121 Intro to Healthcare Data Analytics (3 cr.)**

Covers essential healthcare data analytics skills, including using statistics and database design. Students will collect and analyze data, create visualizations, and report findings. Practical exercises and real-world examples prepare students to excel in healthcare analytics.

## Course Descriptions

<b>10530157 Revenue Cycle Management (2 cr.)</b>	Develops skills in managing the revenue cycle by collaborating with teams, ensuring compliance, and applying measures to improve efficiency. Learners will evaluate coding practices for fraud and abuse, conduct audits, and handle appeals. Additionally, learners will analyze utilization data, manage the charge description master (CDM), and conduct clinical documentation improvement (CDI) activities to enhance documentation and reimbursement accuracy.
<b>10530158 Healthcare Law (3 cr.)</b>	Develops skills to maintain a legally defensible health record, differentiate between legal health records, and ensure compliance with regulations related to patient rights and confidentiality. Learners will interpret laws affecting health information, process requests for health data, and prepare records for legal proceedings. Additionally, learners will analyze organizational policies for regulatory compliance, evaluate risk management data, and recommend responses to breaches of professional ethics.
<b>10530159 Healthcare Revenue Management (3 cr.)</b>	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.
<b>10530161 Health Quality Management (3 cr.)</b>	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.
<b>10530162 Foundations of HIM (3 cr.)</b>	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.
<b>10530163 Healthcare Stats and Analytics (3 cr.)</b>	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.

## Course Descriptions

<b>10530164 Intro to Health Informatics (3 cr.)</b>	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.
<b>10530165 Intermediate Coding (3 cr.)</b>	Prepares learners to assign ICD and CPT/HCPCS codes supported by medical documentation and official coding guidance to support appropriate reimbursement. Learners will participate in CDI activities, including preparation of appropriate physician queries in accordance with compliance guidelines.
<b>10530166 Health Information Technology Capstone (1 cr.)</b>	Explores technical skills and professional attributes desired for the HIM profession and conducts activities to assess one's own readiness to enter the health information industry.
<b>10530167 Management of HIM Resources (3 cr.)</b>	Examines the principles of management to include planning, organizing, human resource management, directing, and controlling as related to the health information department.
<b>10530178 Healthcare Law &amp; Ethics (2 cr.)</b>	Examines regulations for the content, use, confidentiality, disclosure and retention of health information. An overview of the legal system and ethical issues are addressed.
<b>10530179 Management &amp; Performance Improvement (3 cr.)</b>	Compares management theories and leadership styles while investigating the role of the HIM Manager. Learners will conduct operational and human resource management activities and explore project management and performance improvement tools. Additionally, learners will utilize data analytics for strategic planning, evaluate performance data for trends, and report outcomes to external agencies.
<b>10530180 Intro to Health Information (2 cr.)</b>	Investigates the external forces shaping the healthcare delivery system, differentiating between types of organizations across the continuum of care. Learners will explore the roles and responsibilities of various healthcare providers and the interrelationships among them, as well as the specific duties of health information professionals. Additionally, learners will demonstrate professional ethical standards and examine both paper and electronic health records.
<b>10530182 Human Disease for the Health Professions (3 cr.)</b>	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.

## Course Descriptions

- 10530184 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.
- 10530190 Data Management in HIM (2 cr.)** Evaluates compliance with documentation requirements, comparing standards from various accreditors. Learners will perform record completion processes, including quantitative and qualitative analysis, while monitoring compliance with documentation standards. Additionally, learners will utilize secondary data sources, manage the master patient index, and apply retention and destruction policies for electronic health information. This course equips learners with essential skills for effective data management in healthcare.
- 10530196 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.
- 10530197 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.
- 10530199 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**

- 10531101 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.
- 10531101A 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.

## Course Descriptions

<b>10531105 Emergency Medical Responder with Healthcare Provider CPR (2 cr.)</b>	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.
<b>10531107 EMR to EMT Transition Course (4 cr.)</b>	Teaches emergency medical responders (EMR) the necessary material to transition to the emergency medical technician level. This course provides credit for prior learning at the EMR level. Must have a current WI EMR License with advanced skill and current AHA Healthcare Provider CPR or equivalent to register.
<b>10531169 Emergency Medical Technician - Basic (5 cr.)</b>	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.
<b>10531192 Course # Reserved by State: EMT-Basic (4 cr.)</b>	Teaches and evaluates the knowledge and skills needed by ambulance personnel to respond to and treat cardiac arrest, critical medical and trauma situations. Also teaches extrication and ambulance operations. This course meets Wisconsin and National requirements for licensure. Students need to complete all prerequisites prior to registration. American Heart Association Healthcare CPR; EMT Criminal Background Check; EEMT Caregiver Background Check; EMT Preclinical Health Form and a Mandatory Orientation must be completed.
<b>10531301 Emergency Med Resp and Emergency Med Tech - Part 1 (2 cr.)</b>	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.
<b>10531302 Emergency Med Resp and Emergency Med Tech - Part 2 (3 cr.)</b>	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.
<b>10531911 EMS Fundamental (2 cr.)</b>	This course 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.

## Course Descriptions

<b>10531912 Paramedic Medical Principles (4 cr.)</b>	This course 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.
<b>10531913 Advanced Patient Assessment Principles (3 cr.)</b>	This course 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.
<b>10531914 Advanced Pre-Hospital Pharmacology (3 cr.)</b>	This course 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.
<b>10531915 Paramedic Respiratory Management (2 cr.)</b>	This course 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 patient 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.
<b>10531916 Paramedic Cardiology (4 cr.)</b>	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.
<b>10531917 Paramedic Clinical/Field 1 (3 cr.)</b>	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.

## Course Descriptions

<b>10531918 Advanced Emergency Resuscitation (1 cr.)</b>	By teaching Advanced Cardiac Life Support (ACLS) and Pediatric Advanced Life Support (PALS) methodologies and protocols, this course 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.
<b>10531919 Paramedic Medical Emergencies (4 cr.)</b>	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.
<b>10531920 Paramedic Trauma (3 cr.)</b>	This course 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.
<b>10531921 Special Patient Populations (3 cr.)</b>	This course 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.
<b>10531922 EMS Operations (1 cr.)</b>	This course provides the paramedic student with the knowledge of operational roles and responsibilities to ensure patient, public, and EMS personnel safety.
<b>10531923 Paramedic Capstone (1 cr.)</b>	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.
<b>10531924 Paramedic Clinical/Field 2 (4 cr.)</b>	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.

## Course Descriptions

- 10531925 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.
- 30531331 Law Enforcement Emergency Response (1 cr.)** Learn how to perform an initial medical assessment for injury or medical condition, how to provide immediate treatment for a variety of injuries and conditions, and how to perform CPR and use an automatic emergency defibrillator.
- 30531334 Advanced EMT (4 cr.)** Teaches and evaluates the licensed EMT's knowledge and advanced skills including IV therapy, subq. injections and pharmacology. This course meets Advanced EMT licensure requirements. Students must have current Wisconsin EMT-Basic License, updated immunizations, current AHA BLS CPR and criminal background checks. Department consent is required.
- 31531301 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.
- 31531315 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 533 - Sensory & Reading Impaired Srv**
- 30533300 Braille Transcription I (3 cr.)** Introduces the Braille system, with contractions and their usage, and the rules of Braille through short-form words. It also covers the means of producing Braille including slate and stylus, Perkins Manual Braille and computer-assisted Braille transcription software.
- 30533301 Braille Transcription II (3 cr.)** Uses Braille transcription software as the only mode of transcription. Abbreviations, letter signs and symbols, Roman numerals, italics and asterisk transcription are emphasized.
- 30533302 Braille Manuscript Writing (3 cr.)** Prepares learners to submit a trial manuscript of approximately 35 Braille pages. The manuscript is to resemble a complete Braille book. Submission of this manuscript to the Library of Congress is required as part of certification in literary Braille.
- 30533303 Braille Communication Skills (1 cr.)** Provides the fundamentals of language skills as they relate to Braille transcription. Usage, grammar and punctuation rules are emphasized and applied.

## 537 - Therapeutic Massage

## Course Descriptions

<b>31537301 Therapeutic Massage - Musculoskeletal Anatomy (2 cr.)</b>	Introduces the anatomy and function of human skeletal and muscular systems. Students learn to identify muscle names, locations, origins, and insertion points. Additionally, students learn and develop palpation skills to assist in appropriate treatment planning.
<b>31537302 Therapeutic Massage 1, Introduction to (4 cr.)</b>	Introduces students to the field of touch therapy through history, terminology, and theory. Students are exposed to major concepts of professional ethics, scope of practice, treatment equipment, safety, sanitation, legal requirements, client documentation, communication, and pharmacology. Students will begin hands-on learning of foundational skills such as draping, positioning, self-care, body mechanics, and basic Swedish massage techniques.
<b>31537303 Therapeutic Massage Foundations 2 (4 cr.)</b>	Building on foundational techniques learned, students continue to develop skill in client documentation, massage techniques, medical terminology, pharmacology and common pathologies. Students are introduced to business fundamentals including topics such as business structures, employment documents, professionalism, finances, state laws, and business software. Additional topics include ethics, professionalism, and communication.
<b>31537304 Therapeutic Massage, Pathology (2 cr.)</b>	Students are introduced to common disorders of each body system including signs, symptoms, how the disorder can affect the body, and how massage can impact the specific condition. Students continue to develop medical terminology knowledge and basic understanding of pharmacology.
<b>31537305 Therapeutic Massage - Kinesiology (2 cr.)</b>	Focuses on further study of the musculoskeletal anatomy and the addition of muscle actions. Students develop skills through palpation and range-of-motion, postural, and gait assessments to incorporate into treatment plans to provide more comprehensive client care. Additional topics include ethics, professionalism, and communication.
<b>31537306 Therapeutic Massage - Specialized Techniques (2 cr.)</b>	Students develop techniques for treatment of special populations, are introduced to current and upcoming trends, and gain exposure to therapeutic and spa therapies.
<b>31537307 Massage Clinic &amp; Business Practices (3 cr.)</b>	Students provide professional therapeutic massage services to clients and manage business functions of a student clinic. Business topics include ethics and legal requirements, business software, professional marketing, business start-up, client documentation, and customer service.
<b>31537308 Therapeutic Massage - Industry Standards (2 cr.)</b>	Introduces students to employment options and business fundamentals including topics such as business structures, marketing, professionalism, communication, finances, state laws, licensing, business software, and ethics.

## Course Descriptions

**31537309 Therapeutic Massage - Anatomy & Physiology (3 cr.)**

Introduces chemical composition of the body, structure of cells, tissue types and organ systems. Students study each body system to learn how they work and function together. This course is designed specifically for massage bodywork students.

**31537310 Therapeutic Massage Foundations 1 (3 cr.)**

Introduces students to the field of touch therapy and exposes students to major concepts of professional ethics, scope of practice, treatment equipment, safety, sanitation, legal requirements, client documentation, communication, medical terminology, and pharmacology and pathology fundamentals. Students will begin hands-on learning of foundational skills such as draping, positioning, self-care, body mechanics, and basic Swedish massage techniques.

**31537311 Anatomy & Physiology - Therapeutic Massage (2 cr.)**

Introduces chemical composition of the body, structure of cells, tissue types and organ systems. Students study each body system to learn how they work and function together. This course is designed specifically for massage bodywork students.

**31537312 Therapeutic Massage Clinic (2 cr.)**

Students provide professional therapeutic massage services to clients and manage business functions of a student clinic. Business topics include ethics and legal requirements, business software, professional marketing, business start-up, client documentation, licensing, and customer service.

**31537320 TM - Advanced Pathology (2 cr.)**

Provides an in-depth understanding of pathology related to the study of disease, injury, and structural and functional changes they cause in the human body. Covers common diseases and conditions affecting various systems, including the musculoskeletal, cardiovascular, nervous, respiratory, and integumentary systems. Emphasis is placed on recognizing signs and symptoms, understanding contraindications, and determining modifications to massage techniques. Through case studies and practical discussions, students will develop skills to assess and adapt their approach to support clients' well-being while maintaining professional boundaries and ethical standards.

## Course Descriptions

### **31537321 TM - Advanced Specialized Techniques (2 cr.)**

Covers knowledge and skills related to specialized techniques that address complex client needs. Explores advanced modalities, such as myofascial release, neuromuscular therapy, cupping, lymphatic drainage, and Thai Massage. The course emphasizes technique refinement, anatomical precision, and the therapeutic application of each modality to enhance treatment outcomes. Through hands-on practice and case-based learning, students develop the ability to assess client needs, create customized treatment plans, and apply advanced techniques confidently and safely. Discussions on professional ethics, therapeutic boundaries, and client communication are integrated throughout the course.

### **31537322 TM - Therapeutic Massage Advanced Clinic (2 cr.)**

Provides hands-on experience by working directly with clients in a supervised clinical setting. Students refine skills in assessment, treatment planning, and the application of therapeutic techniques with diverse client populations. Students will integrate knowledge from previous coursework in pathology, advanced techniques, and client communication to deliver safe, effective, and client-centered care. Emphasizes professional standards, ethical practice, and adaptability, with a focus on developing confidence and competence in a professional environment. Students will improve technical skills, clinical reasoning, and client management.

## **539 - Health Services**

### **10539201 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**

### **10543101 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.

### **10543102 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.

## Course Descriptions

<b>10543103 Nursing Pharmacology (2 cr.)</b>	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.
<b>10543104 Nursing Intro Clinical Practice (2 cr.)</b>	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.
<b>10543105 Nursing Health Alterations (3 cr.)</b>	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.
<b>10543106 Nursing Health Promotion (3 cr.)</b>	This course focuses on topics related to health promotion for individuals and families throughout the lifespan. Topics include reproductive issues, pregnancy, labor and delivery, post-partum, the newborn, and the child, 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.
<b>10543107 Nursing Clinical Care Across the Lifespan (2 cr.)</b>	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.
<b>10543108 Intro to Clinical Care Management (2 cr.)</b>	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.
<b>10543109 Nursing Complex Health Alterations I (3 cr.)</b>	Complex Health Alterations I prepares the learner to provide and evaluate care for patients across the lifespan with alterations in cardiovascular, respiratory, endocrine, and hematologic systems as well as patients with fluid/electrolyte and acid-base imbalance, and alterations in comfort.

## Course Descriptions

<b>10543110 Mental Health &amp; Community Concepts (2 cr.)</b>	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.
<b>10543111 Nursing Intermediate Clinical Practice (3 cr.)</b>	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.
<b>10543112 Nursing Advanced Skills (1 cr.)</b>	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.
<b>10543113 Nursing Complex Health Alterations II (3 cr.)</b>	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.
<b>10543114 Nursing Management &amp; Professional Concepts (2 cr.)</b>	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.
<b>10543115 Nursing Advanced Clinical Practice (3 cr.)</b>	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.
<b>10543116 Nursing Clinical Transition (2 cr.)</b>	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.

## Course Descriptions

- 10543118 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.
- 10543127 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)
- 10543128 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)
- 10543129 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)
- 10543130 Paramedic to ADN Skills (2 cr.)** Basic nursing skills and Physical Assessment across the lifespan. Includes medication calculations, aseptic technique, wound care, tracheostomy care, suctioning, management of enteral tubes, medication administration, enemas, ostomy care and catheterization. (Prerequisites: Acceptance to Paramedic-RN Bridge program; 10-543-127, Paramedic to ADN Theory 1; 10-543128, Paramedic to ADN Theory 2; Corequisite: 10-543-130, Paramedic to ADN Clinical)
- 30543300 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.

## Course Descriptions

- 30543303 Patient Care Technician (1 cr.)** Prepares learners for roles as professional caregivers, providing essential skills to support clients across a variety of settings, including home care, skilled nursing facilities, hospitals, and assisted living. This course covers a broad range of personal care fundamentals and interpersonal skills, with a focus on client dignity, safety, and health support. By the end of the course, students will understand the duties and responsibilities, including effective communication, client-centered care, and the importance of maintaining confidentiality and professionalism.
- 31543301 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.
- 31543302 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.
- 31543303 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.
- 31543304 Nursing 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.
- 31543305 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.

## Course Descriptions

<b>31543306 Nursing Health Promotion (3 cr.)</b>	This course focuses on topics related to health promotion for individuals and families throughout the lifespan. Topics include reproductive issues, pregnancy, labor and delivery, post-partum, the newborn, and the child, 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.
<b>31543307 Nursing Clinical Care Across the Lifespan (2 cr.)</b>	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.
<b>31543308 Intro to Clinical Care Management (2 cr.)</b>	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.
<b>544 - Gerontology</b>	
<b>10544160 Health and Aging (1 cr.)</b>	Provides an overview of wellness, exercise, sexuality, spirituality and nutrition as they relate to health and aging.
<b>10544161 Physical Aspects of Aging (1 cr.)</b>	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.
<b>10544162 Psychosocial Issues and Aging (2 cr.)</b>	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.
<b>10544163 Public Policy and Aging (1 cr.)</b>	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.
<b>10544164 Community Resources for the Elderly (1 cr.)</b>	Explores available community options and partnerships that serve the aging population. Access to transportation, housing, work and leisure activities is included.
<b>10544165 Prevention/Safety Concerns for the Elderly (1 cr.)</b>	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 - Substance Use Disorder Service

## Course Descriptions

<b>10550100 Substance Abuse Services, Overview of (2 cr.)</b>	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.
<b>10550109 Clients' Rights and Clinical Ethics (2 cr.)</b>	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.
<b>10550118 Psychopharmacology (3 cr.)</b>	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.
<b>10550120 Assessment and Diagnosis of Substance Abuse (4 cr.)</b>	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.
<b>10550124 SUDC Clinical Preparation (2 cr.)</b>	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.
<b>10550130 Counseling Theory 2 (2 cr.)</b>	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.
<b>10550138 Cross-Cultural Counseling (3 cr.)</b>	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.
<b>10550139 AODA Advanced Internship (2 cr.)</b>	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.

## Course Descriptions

<b>10550160 AODA Internship (4 cr.)</b>	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.
<b>10550200 Introduction to the SUDC Profession (3 cr.)</b>	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.
<b>10550201 Understanding Substance Use (3 cr.)</b>	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.
<b>10550202 Foundations of Case Management (3 cr.)</b>	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.
<b>10550203 Overview of Mental Health Disorders (3 cr.)</b>	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.
<b>10550204 Group Facilitation (3 cr.)</b>	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.
<b>10550205 Counseling Theory (3 cr.)</b>	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.

## Course Descriptions

<b>10550206 Introduction to Interviewing and Counseling Skills (3 cr.)</b>	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.
<b>10550207 Psychopharmacology (3 cr.)</b>	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.
<b>10550208 SUDC Assessment, Diagnosis and Treatment (3 cr.)</b>	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.
<b>10550209 Family Systems (3 cr.)</b>	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.
<b>10550210 Boundaries &amp; Ethics - Helping Professions (3 cr.)</b>	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.
<b>10550211 Clinical Experience I (3 cr.)</b>	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 first-hand knowledge and refine previously acquired skills to gain a greater understanding of self and the helping professions.
<b>10550212 Clinical Experience II (3 cr.)</b>	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 first-hand experience.

### **602 - Automotive Technology**

<b>10602100 Automotive Maintenance and Light Repair 1 (4 cr.)</b>	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.
<b>10602101 Automotive Maintenance and Light Repair 2 (4 cr.)</b>	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.
<b>10602102 Automotive Maintenance and Light Repair 3 (4 cr.)</b>	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.
<b>10602104 Brake Systems (3 cr.)</b>	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.)
<b>10602105 Automotive Maintenance and Light Repair 4 (4 cr.)</b>	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.
<b>10602107 Automotive Service Fundamentals (2 cr.)</b>	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.
<b>10602111 Advanced Electrical Automotive (4 cr.)</b>	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.
<b>10602113 Alternative Fuels (4 cr.)</b>	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.

## Course Descriptions

<b>10602114 Automotive Heating, Ventilation, and Air Conditioning (4 cr.)</b>	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.
<b>10602115 Electrical 1 - ASEP (3 cr.)</b>	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.
<b>10602116 Electrical 2 - ASEP (3 cr.)</b>	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.
<b>10602117 Automatic Transaxles and Transmissions (4 cr.)</b>	Focuses on developing the skills needed to diagnose, service, and repair automatic transmissions/transaxles including overhaul procedures.
<b>10602118 Engine Mechanical (4 cr.)</b>	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.
<b>10602120 Fuel Systems - ASEP (3 cr.)</b>	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.
<b>10602121 Manual Transmissions (4 cr.)</b>	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.
<b>10602122 Driveline/Manual Transmission - ASEP (3 cr.)</b>	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.
<b>10602124 Steering &amp; Suspension Systems (3 cr.)</b>	Focuses on developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures.
<b>10602125 Electrical &amp; Electronic Systems 1 (2 cr.)</b>	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.

## Course Descriptions

<b>10602126 Powertrain Management 1 (4 cr.)</b>	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.
<b>10602129 Powertrain Management 2 (4 cr.)</b>	Teaches students to diagnose and repair engine performance concerns. This course will focus on computerized engine management systems, enhanced emissions, and engine control sensors.
<b>10602130 Import Alternative Fuels (4 cr.)</b>	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.
<b>10602131 Import Automatic Transaxles (4 cr.)</b>	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.
<b>10602132 Import Engine Management 1 (4 cr.)</b>	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.
<b>10602133 Import Engine Management 2 (4 cr.)</b>	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.
<b>10602134 Automotive Engines Measuring - ASEP (3 cr.)</b>	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.
<b>10602135 Dealership Co-op 2 - ASEP (2 cr.)</b>	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.
<b>10602136 Import Engine Mechanical (4 cr.)</b>	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.

## Course Descriptions

<b>10602137 Dealership Co-op 3 - ASEP (2 cr.)</b>	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.
<b>10602137A Dealership Co-op 3 - ASEP (A) (2 cr.)</b>	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.
<b>10602138 Import Manual Transmissions (4 cr.)</b>	Introduces students to the basic knowledge and skills needed to repair and service import manual transmissions, drivelines, differentials, and axles.
<b>10602139 Dealership Co-op 4 - ASEP (2 cr.)</b>	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.
<b>10602141 Dealership Co-op 1 - ASEP (2 cr.)</b>	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.
<b>10602141A Dealership Co-op 1 - ASEP (A) (2 cr.)</b>	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.
<b>10602144 Manual Transmission On Campus (3 cr.)</b>	Focuses on developing the skills needed to diagnose and overhaul clutches, manual transmissions/transaxle, differentials, four-wheel drive/all-wheel drive, and drive axles.
<b>10602145 Automatic Transmission/Transaxle - Co-op (3 cr.)</b>	Designed to give the Bergstrom Co-op student the basic knowledge and skills needed to service automatic transmissions/transaxles. Principles of hydraulics and electronic controls applied to automatic transmissions are covered. Students overhaul a variety of transaxle and transmission units.
<b>10602146 Manual Transmission Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on manual transmission and drivetrain.
<b>10602148 GM ASEP Automatic Transmission/Transaxle (2 cr.)</b>	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.

## Course Descriptions

<b>10602152 Automotive Service Consulting (3 cr.)</b>	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.
<b>10602153 Automotive Service Management (3 cr.)</b>	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.
<b>10602154 Auto MLR 1-Bridge (1 cr.)</b>	Introduces the student to the automotive shop environment while emphasizing shop safety and general shop practices. This bridge class is designed for students that have completed courses at other colleges and would like to receive credit for Automotive Maintenance and Light Repair 1 (10602100).
<b>10602155 Auto MLR 2-Bridge (2 cr.)</b>	Designed for students that have completed courses at other colleges and would like to receive credit for Automotive Maintenance and Light Repair 2 (10602101). This course covers base engine and brake operation including vacuum and base engine diagnosis in regards to brake booster systems.
<b>10602156 Auto MLR 4-Bridge (2 cr.)</b>	Designed for students that have completed courses at other colleges and would like to receive credit for Automotive Maintenance and Light Repair 4 (10602105). This course covers steering and suspension systems as well as an introduction to hybrid vehicles as it relates to safety and electric assisted steering systems.
<b>10602162 Engine Mechanical-Bridge (2 cr.)</b>	Designed for students that have completed courses at other colleges and would like to receive credit for Engine Mechanical (10602118). This course covers base engine repairs and diagnosis of engine mechanical issues.
<b>10602163 Automotive HVAC-Bridge (1 cr.)</b>	Designed for students that have completed courses at other colleges and would like to receive credit for Automotive Heating Ventilation and Air Conditioning (10602114). This course covers refrigeration systems and certification, as well engine cooling and passenger compartment ventilation systems.

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<b>10602164 Automotive HVAC-ASEP (2 cr.)</b>	Focuses on developing the skills needed to diagnose, service, and repair General Motors climate control systems including heating, cooling, and air distribution. Students will learn and practice proper handling of R134a/ 1234YF refrigerants and will also be Federal 609 certified to perform automotive refrigerant repairs.
<b>10602165 Advanced Chassis Systems-ASEP (2 cr.)</b>	Focuses on developing the skills needed to diagnose, service, and repair General Motors antilock brake, vehicle stability enhancement, and electronic steering and suspension systems.
<b>10602167 Automatic Transmission/Transaxle-ASEP (3 cr.)</b>	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.
<b>10602170 Auto Transaxles &amp; Transmissions On Campus (3 cr.)</b>	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.
<b>10602171 Auto Transaxles &amp; Transmissions Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on automatic transaxles and transmissions.
<b>10602172 Powertrain Management 1 On Campus (3 cr.)</b>	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.
<b>10602173 Powertrain Management 1 Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on powertrain management.
<b>10602177 Auto Maintenance &amp; Light Repair 2 On Campus (3 cr.)</b>	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.
<b>10602178 Auto Maintenance &amp; Light Repair 2 Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on Brake systems.
<b>10602179 Engine Mechanical On Campus (3 cr.)</b>	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.
<b>10602180 Engine Mechanical Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on engine mechanical.

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<b>10602181 Auto Maintenance &amp; Light Repair 3 On Campus (3 cr.)</b>	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.
<b>10602182 Auto Maintenance &amp; Light Repair 3 Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on Electrical systems.
<b>10602183 Auto Maintenance &amp; Light Repair 4 On Campus (3 cr.)</b>	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.
<b>10602184 Auto Maintenance &amp; Light Repair 4 Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on steering and suspension systems.
<b>10602188 Automotive HVAC On Campus (3 cr.)</b>	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.
<b>10602189 Automotive HVAC Co-op (1 cr.)</b>	Provides students with work experience on customer vehicles at local vehicle service centers, focusing on HVAC diagnosis and repair.
<b>10602199 Electrical and Electronics 1-GM (3 cr.)</b>	Designed to provide the ASEP student with basic knowledge of automotive electrical applications. Including basic electrical theory, meters, electronic component theory and testing, servicing and repair of General Motors wiring, terminals, and communication systems.
<b>10602200 Electrical and Electronics 2-GM (2 cr.)</b>	Designed to provide the ASEP student with the knowledge of automotive electrical applications. General Motors electrical components, terminology, computer control functions and Hybrid/EV vehicle strategies.
<b>605 - Electronic Technology</b>	
<b>10605106 Solder Rework &amp; Repair-IPC Prep (1 cr.)</b>	Teaches students how to produce high-quality soldered connections that meet the IPC standard regarding materials, methods and verification.
<b>10605111 AC Circuits 2-Electronics/EET (1 cr.)</b>	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.

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<b>10605113 DC Circuits 4 (1 cr.)</b>	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.
<b>10605116 AC Circuits 3 (1 cr.)</b>	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.
<b>10605118 Circuit Analysis (2 cr.)</b>	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.
<b>10605119 Linear Electronics (3 cr.)</b>	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.
<b>10605122 PCB Assembly Systems (1 cr.)</b>	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.
<b>10605125 Semiconductors 3 (1 cr.)</b>	Covers DC and AC analysis of amplifiers. Bypass and coupling capacitor functions, along with circuit limitations due to circuit configuration, are also examined.
<b>10605130 Digital 1 (1 cr.)</b>	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.
<b>10605131 Digital Electronics 2 - Electronics/EET (1 cr.)</b>	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.
<b>10605132 Digital Electronics 3 (2 cr.)</b>	Covers circuit reduction techniques such as Boolean Algebra, Karnaugh Mapping, Sum of Products, etc. Laboratory activities are performed to verify the theory.

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<b>10605141 LabVIEW Graphical Programming (2 cr.)</b>	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.
<b>10605145 Embedded Programming 1 (1 cr.)</b>	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.
<b>10605146 Embedded Programming 2 (1 cr.)</b>	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.
<b>10605148 Embedded Programming 3 (1 cr.)</b>	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.
<b>10605155 Product Testing/Systems (1 cr.)</b>	Addresses programming on Test and Measurement with the graphical programming language LabVIEW. Students create electronic product testing, instrumentation, data acquisition, and data analysis.
<b>10605156 CAD for Electronics (1 cr.)</b>	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.
<b>10605159 PCB Design (1 cr.)</b>	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.
<b>10605160 Microcontroller Interfacing (3 cr.)</b>	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.

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- 10605161 Electronic Design Techniques (2 cr.)** Teaches students to design a printed circuit board using the PCB design software. Provides an overview of the Electronic Design Automation (EDA) tools used in industry today. It also introduces students to computer-aided design (CAD) techniques used in the electronics field. Students learn the basics of CAD software, including the drawing, modifying, dimension and plotting sets of commands.
- 10605162 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.
- 10605163 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.
- 10605165 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.
- 10605193 Internship 2 - Electronics (2 cr.)** Allows students to explore their future career. An internship can be a tremendous learning experience, providing an insight into a work environment for many program graduates. Students will apply what they have learned and become motivated to learn more.
- 606 - Mechanical Technology**
- 10606102 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.
- 10606106 Build Your Own 3D Printer (1 cr.)** Participants learn about the power of 3D printing technology and how to build physical example of their ideas. Using a kit 3D printer, FVTCs instructor will lead students through the process of building the printer, and using it to complete a project in which they will print physical components
- 10606107 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.

## Course Descriptions

<b>10606109 Geometric Dimensioning and Tolerancing (2 cr.)</b>	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.
<b>10606111 Design Problems (4 cr.)</b>	Applies the principles and methods used to solve basic design problems. Students prepare preliminary layouts, assembly drawings and detail drawings. CAD experience is required.
<b>10606114 AutoCAD, Introduction to (1 cr.)</b>	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.
<b>10606115 Design of Tooling (4 cr.)</b>	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.
<b>10606119 Statics and Strength of Materials (3 cr.)</b>	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.
<b>10606121 Elements of Machine Design (3 cr.)</b>	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.
<b>10606123 Kinematics (4 cr.)</b>	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.
<b>10606124 Intro to Product Design &amp; Rapid Prototyping (2 cr.)</b>	Introduces students to additional solid modeling software, the design process, and rapid prototyping of models. Previous solid modeling experience required.
<b>10606139 Introduction to Autodesk Inventor (2 cr.)</b>	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.

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<b>10606141 Introduction to SolidWorks (2 cr.)</b>	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.
<b>10606142 Advanced SolidWorks (2 cr.)</b>	Is a continuation of the Introduction to Solidworks course. Template file customization, advanced reference plane creation, 3D Sketching, Sweeps and Lofts, Threads, Multibody Parts, Flex Bending, Surface Modeling, Advanced Assembly Models and Exploded Views, Advanced Drawing Creation, Sheet Metal, Weldments, and Mold Design are the major topics to be covered.
<b>10606151 Sketching and the Design Process (1 cr.)</b>	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.
<b>10606152 CAD and Geometric Constructions (1 cr.)</b>	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.
<b>10606153 Multiview Projections (1 cr.)</b>	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.
<b>10606154 Section Views and Auxiliary Views (1 cr.)</b>	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.
<b>10606155 Dimensioning and Tolerancing (1 cr.)</b>	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.

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<b>10606156 Threads and Fasteners (1 cr.)</b>	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.
<b>10606157 Gears and Cams (1 cr.)</b>	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.
<b>10606158 Working Drawings (1 cr.)</b>	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.
<b>10606159 Structural and Piping Drafting (1 cr.)</b>	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.
<b>10606160 AutoCAD Mechanical (1 cr.)</b>	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.
<b>10606161 Introduction to AutoCAD (2 cr.)</b>	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.
<b>10606190 Mechanical Design Occupational Experience (2 cr.)</b>	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.

## Course Descriptions

<b>50606701 Introduction to Solid Modeling (1 cr.)</b>	Explores fundamentals of computer-aided design (CAD) using SolidWorks software. Provides an application of SolidWorks in creating manufacturing models including solid-part models, assembly models, and engineering drawings.
<b>50606702 GDT for Metrology Apprentices 1 (1 cr.)</b>	Provides introductory theory and application to Geometric Dimensioning and Tolerancing according to ASME-14.4M-2007 as well as previous Standards written for 1997 and 1982.
<b>50606703 GDT for Metrology Apprentices 2 (1 cr.)</b>	Provides the application of Geometric Dimensioning and Tolerancing according to ASME-14.4M-2007. Apprentices will use SolidWorks to apply GDT to drawings.
<b>609 - Electronic Technology</b>	
<b>10609101 Electrical Safety, Industry (1 cr.)</b>	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.
<b>10609170 Ladder Logic and Control Devices (1 cr.)</b>	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.
<b>10609172 DC/AC Variable Speed Drives (1 cr.)</b>	Covers operational controls, characteristics and drive functionality. Laboratory activities involve drive setup and wiring as well as safe troubleshooting and testing practices. A working knowledge of electronics is recommended.
<b>620 - Electro-Mechanical Technology</b>	
<b>10620103 DC Circuits 3 - Aircraft/Electromechanical (1 cr.)</b>	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.
<b>10620111 Pneumatics 1 (1 cr.)</b>	Provides an introduction to fundamental principles and laws of fluid power, with a focus on pneumatics. Laboratory activities are performed to verify the theory.
<b>10620112 Pneumatics 2 (1 cr.)</b>	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.

## Course Descriptions

<b>10620113 Hydraulics 1 (1 cr.)</b>	Provides an introduction to fundamental principles and laws of fluid power, with a focus on hydraulics. Laboratory activities are performed to verify the theory.
<b>10620114 Hydraulics 2 (1 cr.)</b>	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.
<b>10620131 Electrical Power Distribution 1 (1 cr.)</b>	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.
<b>10620132 Industrial Electrical Applications (1 cr.)</b>	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.
<b>10620142 Motors and Drives 2 (1 cr.)</b>	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.
<b>10620148 Motors and Drives 1 (1 cr.)</b>	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.
<b>10620153 Industrial Solid State 2 (1 cr.)</b>	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.
<b>10620164 Elements of Machines 1 (1 cr.)</b>	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.
<b>10620165 Elements of Machines 2 (1 cr.)</b>	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.
<b>10620171 Electrical Motors-DC (1 cr.)</b>	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.

## Course Descriptions

- 10620173 Servomechanisms 1 (1 cr.)** Introduces the servomechanism systems used to operate many types of automated systems. The concepts and elements of open and closed-loop systems are covered. On/off and PID control modes are also presented. Laboratory activities are performed to verify the theory.
- 10620174 Servomechanisms 2 (1 cr.)** Feedback sensing devices are introduced, and the operation of position and velocity control systems is studied. Laboratory activities are performed to verify the theory.
- 10620187 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.
- 10620188 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.
- 10620189 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.
- 10620190 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.
- 10620191 Advanced Systems Control (1 cr.)** Capstone course that uses the Allen-Bradley SLC-500 programmable controller to operate servomechanism systems and a pneumatic robot. Laboratory activities are performed to verify the programs written by the student.
- 10620192 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.
- 10620193 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.
- 10620199 Blueprint Reading-Electrical & Mechanical (1 cr.)** Introduces students to reading both electrical schematics and mechanical prints.

## **621 - Industrial Welding Technology**

## Course Descriptions

<b>10621101 Welding Codes &amp; Testing (2 cr.)</b>	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.
<b>10621105 Welding/Metal Fab Intro &amp; Safety (1 cr.)</b>	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.
<b>10621108 Weld Print Reading (1 cr.)</b>	Provides practice in reading shop drawings. Topics include orthographic projection, auxiliary views, revolved sections, surface and centerline relationships, isometric drawings, scale drawing and tolerances.
<b>10621113 Robotic Arc Welding, Advanced (2 cr.)</b>	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.
<b>10621114 Weld Symbols (1 cr.)</b>	Teaches students to interpret detailed weld symbols using the American Welding Society standard.
<b>10621115 Welding Processes, Design &amp; Costs (2 cr.)</b>	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.
<b>10621116 Welding Metallurgy (3 cr.)</b>	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.
<b>10621117 Weldability of Materials (3 cr.)</b>	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.
<b>10621129 2D/3D CAD Modeling for Welders (2 cr.)</b>	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.

## Course Descriptions

- 10621134 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.
- 10621140 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 - Industrial Manufacturing Tech

- 10623101 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.
- 10623102 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.
- 10623103 IE/ME Production Engineering (3 cr.)** Provides an overview of the functions of industrial and manufacturing engineering, stressing the importance of a systems approach in achieving operational excellence.
- 10623106 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.
- 10623107 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.
- 10623112 IE/ME-Facility Planning & Material Handling (3 cr.)** Provides students with practical means to use data to develop and improve plant and facility layouts and improve material handling methods that will yield higher production, lower costs, and/or improve the quality and customer service.
- 10623115 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.

## Course Descriptions

<b>10623117 Preventive &amp; Corrective Action (3 cr.)</b>	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.
<b>10623119 Manufacturing Processes with Lab (4 cr.)</b>	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.
<b>10623120 Computer-Aided Manufacturing (4 cr.)</b>	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.
<b>10623121 Engineering Materials (3 cr.)</b>	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.
<b>10623128 Lean Six Sigma Fundamentals (1 cr.)</b>	Explores the fundamental concepts and tools of Lean Six Sigma and their application to the pursuit of organizational excellence through the reduction of variation and waste.
<b>10623131 Tool Design (3 cr.)</b>	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.
<b>10623132 Project Management (3 cr.)</b>	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.
<b>10623137 Applied Statistical Analysis 1 (3 cr.)</b>	Covers the application of statistical methods used to make decisions based on data. Examples include measurement system analysis, control charts, and capability analysis.
<b>10623138 Applied Statistical Analysis 2 (3 cr.)</b>	Continues the statistical methods covered in Applied Statistical Analysis 1. Topics include hypothesis testing, regression analysis, and designed experiments.
<b>10623148 Manufacturing Processes (3 cr.)</b>	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.

## Course Descriptions

<b>10623155 Transformational Leadership (3 cr.)</b>	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.
<b>10623156 Manufacturing Cost Analysis (3 cr.)</b>	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.
<b>10623157 Problem Solving Methodologies (3 cr.)</b>	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.
<b>10623165 Project Application (3 cr.)</b>	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.
<b>10623166 Supplier Mgmt. &amp; Performance Monitoring (3 cr.)</b>	Covers quality expectations between customer and supplier. Topics include product specifications, performance metrics, supplier assessment and approval, quality planning, and corrective action.
<b>10623168 Electrical Concepts &amp; Components (2 cr.)</b>	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.
<b>10623170 Intro to Lean Manufacturing (2 cr.)</b>	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.
<b>10623171 Quality Management (3 cr.)</b>	Includes supplier quality management and cost of quality concepts.
<b>10623173 Metrology, Inspection &amp; Testing (3 cr.)</b>	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.

## Course Descriptions

<b>10623175 Advanced Inspection Techniques (2 cr.)</b>	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.
<b>10623179 Industrial Engineering Essentials (3 cr.)</b>	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.
<b>10623180 Six Sigma Green Belt Training (5 cr.)</b>	Provides all the background and tools needed to be a Six Sigma Green Belt. Basic quality tools, basic statistics, advanced statistical tools, the DMAIC process and group facilitation are some of the many topics covered. Completion of Green Belt course is also required.
<b>10623190 Lean Process Design (3 cr.)</b>	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.
<b>10623191 Lean Events (3 cr.)</b>	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.
<b>10623192 Graphics &amp; Software Applications (4 cr.)</b>	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.
<b>10623193 Automation for MfgET (3 cr.)</b>	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.
<b>10623194 Introduction to Six Sigma (3 cr.)</b>	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.
<b>10623195 Lean Tools (2 cr.)</b>	Introduces useful tools to use when implementing Lean in your organization. Major course topics include team building, lean tools and project management.
<b>10623196 Statistics for Six Sigma (3 cr.)</b>	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.

## Course Descriptions

<b>10623197 Advanced Statistical Tools for Six Sigma (3 cr.)</b>	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.
<b>10623198 Lean Six Sigma Project Application (4 cr.)</b>	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.
<b>10623199 Manufacturing Processes for MfgET (3 cr.)</b>	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.
<b>50623701 Intro to Manufacturing Processes (1 cr.)</b>	Explore common processes used in manufacturing. Emphasis is placed on strategies in standard processes.
<b>50623702 Hand and Bench Tool Inspections (2 cr.)</b>	Provides introduction and practice to the hand and bench tools used in inspection. A variety of precision measuring instruments and other tools will be explored including Verier scales, indirect gages, gage blocks, micrometers, indicators, optical comparator, electronic height gauge, and a toolmaker's microscope.
<b>50623703 Production Part Approval Fundamentals (1 cr.)</b>	Introduces apprentices to the fundamental components of a production part or first run approval process. Emphasizes dimensional verification & validation and communication of results. Also provides overview of the customer/supplier relationship and the components typically required in a production part approval process.
<b>50623704 Coordinate Measuring Machines 1 (2 cr.)</b>	Provides an introduction to a portable CMM (Coordinate Measuring Machine). Apprentices inspect dimensions and tolerances, demonstrate acceptably accuracy, write a measurements routine, employ CAD models, and produce a customized inspection report.
<b>50623705 Process Improvement Tools (2 cr.)</b>	Covers structured problem solving methodologies including Six Sigma and 8D used to implement process improvement.
<b>50623706 Coordinate Measuring Machines 2 (2 cr.)</b>	Provides a continuation of the advanced inspection techniques using a CMM (Coordinate Measuring Machine). Apprentices write a measurement routine for a bridge CMM, inspect GD&T with a CMM, employ laser scanning techniques, and validate measurements using a second method.
<b>628 - Automated Manufacturing</b>	
<b>10628101 Concepts of Programming for Technicians (1 cr.)</b>	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.

## Course Descriptions

<b>10628113 Electronic Construction Applications (1 cr.)</b>	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.
<b>10628140 Intro to Cell Integration (1 cr.)</b>	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.
<b>10628141 Cell Integration (3 cr.)</b>	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.
<b>10628151 PLC 1 (1 cr.)</b>	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.
<b>10628152 PLC 2 (1 cr.)</b>	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.
<b>10628153 PLC 3 (1 cr.)</b>	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.
<b>10628154 PLC 4 (1 cr.)</b>	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.
<b>10628155 PLC 5 (1 cr.)</b>	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.

## Course Descriptions

<b>10628159 Operator Interfaces (1 cr.)</b>	Introduces Human Machine Interface (HMI) development. Students create Displays, HMI tags, Basic Objects, Object Animations, Global Objects, Alarms, and Trending.
<b>10628161 Robotics 1 (1 cr.)</b>	Introduces basic robotic programming techniques. Hands on experience will include safety, system setup, jogging, events, tools, coordinate systems, and robot movement types.
<b>10628162 Robotics 2 (1 cr.)</b>	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.
<b>10628163 Robotics Integration (1 cr.)</b>	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.
<b>10628164 Robotic Basic Programming (2 cr.)</b>	Introduces participants to the proper safety methods and requirements of a robot in a production environment while providing hands-on modifications and maintenance of an application program. Participants learn how to properly connect, master and calibrate the robot as well as create linear application programs. Robotics programs will be created using various end of arm tooling as well as external tools.
<b>10628165 Robotic Programming, Advanced (2 cr.)</b>	Introduces participants to higher level programming of robotic applications. Participants will demonstrate knowledge and capabilities of FOLD concepts, editing facilities, data concept, use of subprograms, check structures and I/O instructions. Interrupt programming, motion instructions, as well as subprograms will also be covered.
<b>10628171 Instrumentation &amp; Process Control 1 (1 cr.)</b>	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.
<b>10628172 Instrumentation &amp; Process Control 2 (1 cr.)</b>	Introduces Proportional Control using Proportional Band and Proportional Gain. Students apply calibration procedures to correct transmitter output signals, and interpret Piping and Instrumentation Diagrams.
<b>10628173 Instrumentation &amp; Process Control 3 (1 cr.)</b>	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.
<b>10628176 Enterprise Integration 1 (1 cr.)</b>	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.

## Course Descriptions

<b>10628177 Enterprise Integration 2 (1 cr.)</b>	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.
<b>10628181 Visual Basic Programming 1 (1 cr.)</b>	Introduces students to computer programming using the Microsoft Visual Basic software. Students will design, construct, and debug VB programs and applications.
<b>10628182 Visual Basic Programming 2 (1 cr.)</b>	Introduces students to advanced computer programming using Microsoft Visual Basic software. Students will design, construct, and debug VB program and applications.
<b>10628187 AutoCAD Fundamentals (1 cr.)</b>	Teaches students to draw, edit, dimension, and plot drawings with the AutoCAD software.
<b>10628188 Blueprint Reading &amp; AutoCAD (1 cr.)</b>	Introduces students to reading both electrical schematics and mechanical prints, while utilizing the AutoCAD software.
<b>10628192 Robotic Simulation (2 cr.)</b>	Is designed for general users and will cover all aspects of robotic simulation software, including robot layout and reach capabilities plus robot program simulation.
<b>10628194 Cell Integration (4 cr.)</b>	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**

<b>10660110 DC Circuits 1 (1 cr.)</b>	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.
<b>10660111 DC Circuits 2 (1 cr.)</b>	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.
<b>10660112 DC Circuits 3 (1 cr.)</b>	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.
<b>10660114 AC Circuits 1 (1 cr.)</b>	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.

## Course Descriptions

<b>10660115 AC Circuits 2 (1 cr.)</b>	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.
<b>10660128 Semiconductors 1 (1 cr.)</b>	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.
<b>10660129 Semiconductors 2 (1 cr.)</b>	Introduces students to transistor operation as a switch, SCR, Triac, and Operational Amplifier operation and application.
<b>10660130 Digital Electronics Tech 1 (1 cr.)</b>	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.
<b>10660131 Digital Electronics Tech 2 (1 cr.)</b>	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.
<b>10660135 Course # Reserved by State (0 cr.)</b>	This course number has been reserved for the statewide course Digital Electronics 1.
<b>10660136 Course # Reserved by State (0 cr.)</b>	This course number has been reserved for the statewide course Digital Electronics 1a OR Digital Electronics 2.
<b>10660137 Course # Reserved by State (0 cr.)</b>	This course number has been reserved for the statewide course Digital Electronics 1b.
<b>10660151 Embedded Programming 1 (1 cr.)</b>	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.
<b>10660163 Construction Techniques (1 cr.)</b>	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.
<b>10660170 Ladder Logic &amp; Control Devices (1 cr.)</b>	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.
<b>10660181 Technical Software Essentials (1 cr.)</b>	Introduces students to the Microsoft Office family of products. Students will create and edit Word documents, Excel spreadsheets, and Access databases.

## Course Descriptions

- 10660184 Computer Systems & Networks 1 (1 cr.)** Focuses on computer terms, computer hardware, computer functions, security and operating systems. Basic networking concepts are also introduced.
- 10660185 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 Tech

- 10662101 Digital Electronics Design 1 (3 cr.)** Covers an introduction to logic and digital electronics, numbering systems, binary logic and truth table, Boolean algebra and logic gates, introduction to canonical and standard forms, combination logic circuits including encoders, decoders, multiplexers, magnitude comparators and binary adders, and introduction to sequential logic circuits including latches and flip-flops, counters, registers. Laboratory activities are performed to verify the theory.
- 10662102 Essential Engineering Software (1 cr.)** Introduces engineering software tools and concepts. General Technical software and essential software and apps in Electrical and Electronic Engineering will be introduced to the students.
- 10662103 Circuit 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 that meet the IPC standard regarding materials, methods, and verification.
- 10662105 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.

## Course Descriptions

- 10662106 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.
- 10662107 DC/AC Circuit Analysis 2 (3 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, and nodal analysis are introduced. It also Covers the application of basic theory to AC circuits. Topics include sine-wave description, reactance, phase, fundamental AC power concepts and transformers. RC, RL and RLC circuits using complex numbers are analyzed. Passive filter circuits are introduced along with resonant circuits. Circuit simulation software is used to aid in the analysis and prediction of circuit operation. Laboratory activities are performed to verify the theory.
- 10662108 Semiconductor Devices (3 cr.)** Covers semiconductor materials, the operation of diodes, Zener diodes, clipping and clamping circuits and the construction of rectifiers and filter circuits, fundamental transistors construction and operation, transistors operation as a switch, DC and AC analysis of transistors, bypass and coupling capacitor functions, along with circuit limitations due to circuit configuration. Operation of FET, MOSFET, SCR, DIAC, TRIAC, and IGBT are also covered. SiC and GaN power semiconductor devices are also introduced. Laboratory experiments are performed to verify theory.
- 10662109 Programming for Electrical Engineering (3 cr.)** Introduces programming concepts and statements for use in Electrical Engineering including algorithms, data representation and input and output of data, variables and data type considerations, if-else and switch-case programming constructs, looping constructs, creating programmer defined functions, arrays, pointers, string manipulation, data structures. Laboratory activities are performed to tie the concepts together.

## Course Descriptions

**10662110 Digital Electronics Design 2 (2 cr.)** Covers logic circuit design and analysis techniques including Boolean algebra, combination logic circuits, canonical and standard forms, reduction techniques, Karnaugh Mapping, static hazards, NAND and NOR implementation, Exclusive-Or function, combinational design using MSI, sequential logic circuits design including State machines, counters and registers, and synthesizable HDL models of logic circuits using FPGA. Laboratory activities are performed to verify the theory and include project design covering layout, construction, testing and documentation.

**10662134 Embedded Systems (4 cr.)** Introduces the student to the fundamentals of embedded system design. Embedded systems are used in commercial, consumer, and residential products. The architecture of the microcomputers and microcontrollers will be discussed including, memory systems and devices, bus systems, A/D and D/A conversions, serial and parallel communications, timers and counters, interrupts, and interfacing to various external devices. Microcontroller board-based modules on the AVR/ARM microcontrollers will be covered. Assembly and C/C++ language programming will be used to learn embedded systems development.

**10662140 Data Communications and Networking (3 cr.)** Overview of fundamental concepts and technologies used in computer networks and digital communications. Network OSI model and Internet (TCP/IP) model and layers will be studied including their function, protocols, and services. Topics regarding network design concepts will be covered including LAN, WLAN, WAN, and Internet topologies and functions along with associated hardware. Students will be familiar with new technologies and applications such as IoT and Cloud-based services. Communication technology and hardware including serial communication, Analog to Digital conversion, modems, routers, switches, multiplexers, and modulation waveforms will be discussed.

### **699 - Technical Communications**

**10699100 Writing for the Media (3 cr.)** This course gives students the skills and practice needed to develop various types of communication products for media outlets. Students use journalism strategies to create various types of communication products, including articles, audiovisual scripts, and press releases.

## Course Descriptions

<b>10699102 Intercultural Communication (3 cr.)</b>	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.
<b>10699104 Research Methods for Professional Communications (3 cr.)</b>	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.
<b>10699105 Content Writing and Digital Storytelling (3 cr.)</b>	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.
<b>10699106 Proposal/Grant Writing (3 cr.)</b>	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.
<b>10699112 Introduction to Professional Communications (3 cr.)</b>	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.
<b>10699116 Developing Product Documentation (3 cr.)</b>	Focuses on the preparation of various types of manuals—procedural and instructional. Skills addressed include layout and design, collaboration and project management.
<b>10699117 Digital Media Content Design (3 cr.)</b>	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.
<b>10699120 Instructional Design (3 cr.)</b>	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.
<b>10699121 Introduction to Social Media (1 cr.)</b>	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.

## Course Descriptions

- 10699122 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.
- 10699123 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.
- 10699141 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.
- 10699142 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**
- 10801133 Children's Literature (3 cr.)** This course introduces students to the major genres of literature for young people such as folklore, illustrated works, and short novels. Students will read a variety of works from different eras and study ways children's literature and the understanding of childhood have developed.
- 10801136 English Composition 1 (3 cr.)** Learners develop and apply skills in all aspects of the writing process. Through a variety of learning activities and written documents, learners employ rhetorical strategies, plan, organize and revise content, apply critical reading strategies, locate and evaluate information, integrate and document sources, and apply standardized English language conventions.
- 10801137 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10801138 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10801139 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10801140 Introduction to Literature (3 cr.)** Recommended as a first course in literary analysis, this course introduces students to the major genres of literature and addresses issues related to writing about literature and/or other texts.

## Course Descriptions

<b>10801141 Introduction to Mass Communications (3 cr.)</b>	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.
<b>10801142 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10801143 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10801144 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10801145 Ethnic Literature (3 cr.)</b>	Explores questions of identity within various cultural contexts. Writers represent one or more ethnic groups working in one or more genres of literature with emphasis on developments in voice, genre, and style over chronological periods and geographical zones. Individual sections may vary in particular emphasis.
<b>10801151 Course # Reserved by State: Communication Skills 1 (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10801152 Course # Reserved by State: Communication Skills 2 (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10801154 Contemporary Literature (3 cr.)</b>	This course surveys contemporary literature in relation to contemporary society and to major developments in the arts of fiction, drama and poetry. Readings mainly cover material published in the last 25 years.
<b>10801195 Written Communication (3 cr.)</b>	Develops writing skills which include prewriting, drafting, revising, and editing. A variety of writing assignments are designed to help the learner analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and content. Also develops critical reading and thinking skills through the analysis of a variety of written documents.
<b>10801196 Oral/Interpersonal Comm (3 cr.)</b>	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.
<b>10801196E Oral/Interpersonal Comm - Auto (3 cr.)</b>	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.

## Course Descriptions

- 10801197 Technical Reporting (3 cr.)** Prepare and present written, oral, and visual communication products, including but not limited to instructions, proposals, informal and formal reports. Produce clear, usable communication by incorporating information design principles, arranging content to satisfy diverse audience needs, and presenting visuals for various contexts. Designed to develop collaborative communication practices, information literacy skills, and ethically responsible professional communication strategies.
- 10801198 Speech (3 cr.)** Explores the fundamentals of effective oral presentation to small and large groups. Topic selection, audience analysis, methods of organization, research, supporting evidence, delivery techniques, active listening, and other essential elements of speaking successfully, form the basis of the course. Includes informative, persuasive, and occasion speech presentations. Audience requirements to be determined by the individual colleges.
- 10801223 English Composition 2 (3 cr.)** Students continue the study of academic writing to attain advanced writing and critical thinking skills. Students learn textual synthesis, analysis, advanced source integration, and rhetorical strategies.
- 31801318 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.
- 31801318F 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..
- 31801320 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

#### 10802102 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.

#### 10802103 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.

#### 10802104 Spanish 5 (3 cr.)

A continuation of Spanish 4. Principles of grammar are systematically reviewed with emphasis on the use of the past, future and subjunctive verb tenses. Students will continue to expand their vocabulary and develop their oral and listening skills. Culture will also be discussed.

#### 10802106 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.

#### 10802107 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!

#### 10802110 Spanish Conversation Intermediate (2 cr.)

Designed for students and professionals who have attained an intermediate level of Spanish at FVTC or elsewhere, desiring to practice and enhance their conversational ability. Upon completion of the course, students will speak Spanish at an intermediate level with increasing comfort and effectiveness. Completion of Spanish 3 or consent of instructor is required.

#### 10802119 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.

#### 10802120 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.

#### 10802126 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.

## Course Descriptions

<b>10802127 German 3 (3 cr.)</b>	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.
<b>10802128 German Conversation (3 cr.)</b>	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.
<b>10802171 Spanish 1 (4 cr.)</b>	For students beginning the study of Spanish. Emphasizes development of basic communicative skills through practice in listening, speaking, reading and writing. Stresses vocabulary and grammar to enhance students' ability to speak and write in Spanish. Study of customs and values provides an increased awareness of Spanish speaking cultures. On completion students are expected to participate in uncomplicated conversations on everyday topics.
<b>10802172 Spanish 2 (4 cr.)</b>	¡Bienvenidos! Welcome! This communicative language class is designed for students who have completed one semester of college Spanish. Emphasis is placed on the continued development of more complex communicative skills through practice in listening, speaking, reading and writing. By the end of Spanish 2, you will acquire the listening, speaking, reading and writing skills necessary to handle simple everyday survival tasks in Spanish. You will also have a better understanding of and appreciation for people and cultures other than your own and an increased awareness of Spanish-speaking countries in the world.
<b>10802174 Japanese 1 (4 cr.)</b>	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.
<b>10802175 Japanese 2 (4 cr.)</b>	Expands on the foundational skills acquired in Japanese 1, this course explores the language of everyday situations, focusing on vocabulary, grammar, word recognition and usage, conversation, and developing a deeper understanding of culture and tradition.
<b>10802180 Italian 2 (3 cr.)</b>	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.

## Course Descriptions

<b>10802181 Italian 3 (3 cr.)</b>	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.
<b>10802181 Italian 3 (3 cr.)</b>	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.
<b>10802182 Italian Conversation (3 cr.)</b>	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 Italian 3 or instructor consent required.
<b>10802991 Elective: Choice of Foreign Language (3 cr.)</b>	Choice of Foreign Language such as: Arabic, Chinese, English, French, German, Hmong, Italian, Japanese, Polish, Portuguese, Russian, Spanish

### 803 - History

<b>10803111 US History to 1877 (3 cr.)</b>	Surveys U.S. political, social, and economic development from the pre-colonial era to the post-Civil War period. Emphasizes reading, writing, and discussion.
<b>10803112 US History Since 1877 (3 cr.)</b>	Surveys U.S. political, social, and economic development from the post-Civil War era to the present. Emphasizes reading, writing, and discussion.
<b>10803114 Native American History (3 cr.)</b>	Introductory course focusing on Native American history from the pre-Columbian era to the present. Topics include origins, cultures and spirituality, economics, interactions with Euro-Americans and the US government (including removal and assimilation), alliances and rivalries, military strategies, native leadership, and tribal sovereignty. Explores the connections between native history and current affairs, with emphasis on native voices.

### 804 - Mathematics

## Course Descriptions

- 10804107 College Mathematics (3 cr.)** This course is designed to review and develop fundamental concepts of mathematics in the areas of algebra, geometry, trigonometry, measurement and data. Algebra topics emphasize simplifying algebraic expressions, solving linear equations and inequalities with one variable, solving proportions and percent applications. Geometry and trigonometry topics include; finding areas and volumes of geometric figures, applying similar and congruent triangles, applying Pythagorean Theorem, and solving right triangles using trigonometric ratios. Measurement topics emphasize the application of measurement concepts and conversion techniques within and between U.S. customary and metric system to solve problems. Data topics emphasize data organization and summarization skills, including: frequency distributions, central tendency, relative position and measures of dispersion. Special emphasis is placed on problem solving, critical thinking and logical reasoning, making connections, and using calculators.
- 10804113 College Technical Math 1A (3 cr.)** Topics include: 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 Mathematics 1A and College Technical Mathematics 1B is the equivalent of College Technical Mathematics 1.
- 10804114 College Technical Math 1B (2 cr.)** This course is a 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 Mathematics 1A and College Technical Mathematics 1B is the equivalent of College Technical Mathematics 1.
- 10804115 College Technical Math 1 (5 cr.)** Topics include: solving linear, quadratic, and rational equations; graphing; formula rearrangement; solving systems of equations; percent; proportions; measurement systems; computational geometry; right and oblique triangle trigonometry; 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 Mathematics 1A and College Technical Mathematics 1B.

## Course Descriptions

<b>10804116 College Technical Math 2 (4 cr.)</b>	Topics include: 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.
<b>10804118 Intermediate Algebra with Applications (4 cr.)</b>	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.
<b>10804123 Math w Business Apps (3 cr.)</b>	This course integrates algebraic concepts, proportions, percents, simple interest, compound interest, annuities, and basic statistics with business/consumer scenarios. It also applies math concepts to the purchasing/buying and selling processes.
<b>10804124 Math for Laboratory Science (3 cr.)</b>	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.
<b>10804133 Math &amp; Logic (3 cr.)</b>	Students will apply problem solving techniques from discrete mathematics. Topics include symbolic logic, sets, algebra and base number systems.
<b>10804134 Course # Reserved by State: Mathematical Reasoning (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10804135 Quantitative Reasoning (3 cr.)</b>	This course is intended to develop analytic reasoning and the ability to solve quantitative problems. Topics to be covered may include: construction & interpretation of graphs; descriptive statistics; geometry & 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.

## Course Descriptions

<b>10804144 Math of Finance (3 cr.)</b>	Students will create financial timelines to solve financial problems. They will solve problems involving simple and compound interest. Students will use discounting to solve problems. They will calculate the components of ordinary and complex annuities. Students will solve problems using financial formulas, business calculators, and or tables. Finally, students will use descriptive statistics and spreadsheet applications to interpret financial data.
<b>10804147 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10804171 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10804181 Calculus 2 (4 cr.)</b>	Designed for students of mathematics, science, and engineering. This course continues the study of analytic geometry and calculus. Topics included in this course are techniques of differentiation and integration of transcendental functions, analysis of infinite sequences and series, an introduction to first-order differential equations, parametric equations and derivatives of parametric curves, polar coordinates in the plane and integrals using polar coordinates, the analytic geometry of the conic sections, and iterated integration.
<b>10804182 Calculus 3 (4 cr.)</b>	Designed for students of mathematics, science, and engineering, this course continues the study of analytic geometry and calculus. Topics included in this course are vectors in two and three dimensions, dot and cross products, lines, and planes; vector functions and their differentiation and integration; multivariate differential and integral calculus, partial derivatives and their applications, gradients, and multiple integrals; line and surface integrals, Fundamental Theorem of line integrals, Green's Theorem, and Stokes' Theorem.
<b>10804187 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10804188 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10804189 Introductory Statistics (3 cr.)</b>	Students taking Introductory Statistics display data with graphs, describe distributions with numbers perform correlation and regression analyses, and design experiments. They use probability and distributions to make predictions, estimate parameters, and test hypotheses. They draw inferences about relationships including ANOVA.
<b>10804191 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10804192 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.

## Course Descriptions

<b>10804193 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10804197 College Algebra and Trigonometry with Applications (5 cr.)</b>	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.
<b>10804198 Calculus 1 (4 cr.)</b>	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.
<b>31804307 Math for the Trades (2 cr.)</b>	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.
<b>31804308 Industrial Maintenance Math (2 cr.)</b>	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.
<b>31804310 Essential Workplace Math (3 cr.)</b>	Prepares learner to engage in financial transactions including comparing costs and making change, calculate percentages, and create and use budgets.
<b>50804504 Industrial Math 1 (1 cr.)</b>	Explore the topics of applied arithmetic and algebra. Study concepts related to measurement, fractions, decimals, percent, ratio and proportion, signed numbers, formula substitution, solutions to equations, tapers and gears. Calculate the areas and volumes of common geometric shapes.
<b>50804505 Industrial Math 2 (1 cr.)</b>	Examine topics in geometry and trigonometry that are related to the metalworking trades. Practice applying geometric theorems and solving both right and oblique triangle problems.

## 805 - Music

## Course Descriptions

**10805101 Music Appreciation (3 cr.)** Discover how music is intertwined with the history, art, politics, religion, and culture of people from around the world and across the centuries. In this course, students will learn to identify voices, instruments, and genres of music from the Middle Ages to today. Students will develop active listening skills and an understanding of how music, beyond one's personal taste, can be appreciated for its artistry and significance on human interconnectedness. Attendance at one live school, community, or professional musical performance may be required.

### 806 - Natural Science

**10806105 Principles of Animal Biology (4 cr.)** Introductory course focused on general biological principles, cell structure and function, genetics, organ system anatomy and physiology, behavior, evolution, and ecology. May include dissection of fresh and/or preserved materials.

**10806112 Principles of Sustainability (3 cr.)** Prepares the student to develop sustainable literacy, analyze the interconnections among the physical and biological sciences and environmental systems, summarize the effects of sustainability on health and well-being, analyze connections among social, economic, and environmental systems, employ energy conservation strategies to reduce the use of fossil fuels, investigate alternative energy options, evaluate options to current waste disposal and recycling in the U.S., and analyze approaches used by your community to promote and implement sustainability.

**10806114 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.

**10806114DE 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.

**10806122 Course # Reserved by State: Natural Sciences in Society (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.

**10806127 Course # Reserved by State: Chemistry 1 (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.

**10806129 Course # Reserved by State: Chemistry 2 (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.

**10806130 Course # Reserved by State (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.

## Course Descriptions

- 10806134 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.
- 10806134DE 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.
- 10806135 College Chemistry 1 (5 cr.)** General college chemistry which includes the topics of measurement, chemical nomenclature, chemical reactions and stoichiometry, atomic structure, gas laws, thermochemistry, chemical bonding and solution chemistry. The course is for students who need the first one of two semesters of what is typically considered freshman university level chemistry for science majors and university transfer students. Laboratory work assists in understanding chemical concepts and developing problem-solving skills.
- 10806136 College Chemistry 2 (5 cr.)** This course covers the principles and applications of organic chemistry, reaction kinetics, equilibrium, thermodynamics, electrochemistry, coordination compounds, nuclear chemistry and environmental chemistry. Lab activities explore traditional analytical chemistry techniques, making extensive use of computer-assisted data analysis. This course involves rigorous quantitative problem solving, and a solid mathematics background is recommended.
- 10806137 Course # Reserved by State: Comprehensive Tech Physics (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10806139 Survey of Physics (3 cr.)** This course emphasizes understanding basic physics concepts through laboratory investigation and applications. Topics include kinematics, dynamics, work, energy, power, temperature, heat, waves, electricity, magnetism, electromagnetic waves, and optics.
- 10806143 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 conversions and analysis, kinematics, dynamics, work, energy, power, temperature and heat.
- 10806144 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.

## Course Descriptions

<b>10806149 Course # Reserved by State: Introduction to G.I.S. (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10806154 General Physics 1 (4 cr.)</b>	Presents the applications and theory of basic physics principles. This course emphasizes problem-solving, laboratory investigation, and applications. Topics include unit conversion, vector analysis, kinematics and dynamics of particles, rotational mechanics, fluids, heat and temperature, and harmonic motion and waves.
<b>10806158 Calculus Physics 1 - Enhancement (1 cr.)</b>	This course is a mathematical enhancement transforming General Physics 1 (4 cr) into Calc-based Physics 1 (5 cr). Topics include deriving fundamental kinematic equations, time- and position-varying forces, impulse, work, rotational motion, moments of inertia, simple-harmonic motion, thermodynamics.
<b>10806164 General Physics 2 (4 cr.)</b>	Covers applications/theory of basic physics principles: problem-solving, laboratory investigation, and applications including unit conversion and analysis, mechanical waves, harmonic motion, wave and ray optics, electricity, and magnetism.
<b>10806168 Calc Physics 2-Enhancement (1 cr.)</b>	This course is a mathematical enhancement transforming General Physics 2 (4 cr) into Calc-based Physics 2 (5 cr). Topics include derivations of work, potential energy, field strength and capacitor charges in circuits, with emphasis on Gauss's and Ampere's Laws and Maxwell Equations.
<b>10806169 Course # Reserved by State: Energy in Nature, Tech &amp; Soc (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10806172 Course # Reserved by State: Basic Nutritional Science (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10806173 Applied Science for Transportation (1 cr.)</b>	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.
<b>10806176 DNA Science (4 cr.)</b>	Includes instruction in DNA structure and function as well as application of DNA science to laboratory testing. Students will learn the basic tools and techniques used in the DNA laboratory including DNA restriction analysis, purification and identification of DNA and basic PCR techniques used in many laboratories.

## Course Descriptions

- 10806177 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.)
- 10806177DE 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.)
- 10806178 Course # Reserved by State: Life Science Chemistry (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10806179 Adv Anatomy & Physiology (4 cr.)** Advanced Anatomy and Physiology is the second semester in a two-semester sequence in which normal human anatomy and physiology are studied using a body systems approach with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. Instructional delivery within a classroom and laboratory setting. Experimentation within a science lab will include analysis of cellular metabolism, the individual components of body systems such as the nervous, neuro-muscular, cardiovascular, and urinary. Continued examination of homeostatic mechanisms and their relationship to fluid, electrolyte, acid-base balance and blood. Integration of genetics to human reproduction and development are also included in this course.

## Course Descriptions

<b>10806179DE Adv Anatomy &amp; Physiology (4 cr.)</b>	Advanced Anatomy and Physiology is the second semester in a two-semester sequence in which normal human anatomy and physiology are studied using a body systems approach with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. This course includes analysis of cellular metabolism, the individual components of body systems such as the nervous, neuro-muscular, cardiovascular, and urinary. Continued examination of homeostatic mechanisms and their relationship to fluid, electrolyte, acid-base balance and blood. Integration of genetics to human reproduction and development are also included in this course.
<b>10806182 Course # Reserved by State: Forces, Fields, &amp; Energy (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10806184 Course # Reserved by State: Plant Biology (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10806186 Intro to Biochemistry (4 cr.)</b>	Provides students with skills and knowledge of organic and biological chemistry necessary for application within Nursing and other Allied Health careers. Emphasis is placed 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.
<b>10806187 Course # Reserved by State: Calculus Based Physics 1 (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10806188 Course # Reserved by State: Calculus Based Physics 2 (3 cr.)</b>	Provides a calculus-based approach to the study of physics and is a continuation of Calculus Based Physics 1. Topics include: electric fields, magnetic fields, Maxwell's equations, electromagnetic waves, and optics. Lab activities are related to and support classroom presentations.
<b>10806189 Basic Anatomy (3 cr.)</b>	Examines basic concepts of human anatomy and physiology. Learners explore the structure and function of all body systems.
<b>10806197 Microbiology (4 cr.)</b>	Examines microbial structure, metabolism, genetics, growth and the relationship between humans and microbes. Addresses disease production, epidemiology, host defense mechanisms and the medical impact of microbes. Presents the role of microbes in the environment, industry, and biotechnology.

## Course Descriptions

### **10806198 Human Biology (4 cr.)**

This is an introductory course that 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. The course consists of 3 hours of lecture and 2 hours of lab per week. Note: This course does not meet requirements for or substitute for General Anatomy and Physiology or Anatomy & Physiology I and II.

### **10806198DE Human Biology (4 cr.)**

This is an introductory course that 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. Note: This course does not meet requirements for or substitute for General Anatomy and Physiology or Anatomy & Physiology I and II.

### **10806200 Course # Reserved by State: Calculus Physics (0 cr.)**

This course number has been reserved as a unique general education or statewide course number by the state office.

## **807 - Physical Education**

### **10807102 Nutrition for Life (1 cr.)**

Examines the nutrient requirements of healthy individuals, nutrient categories, and food sources as well as their characteristics in relation to physiological functions, metabolism and disease prevention.

### **10807103 Stress Management: Fitness for Life (1 cr.)**

The course explores the nature of stress, determinant causes, the physiological and psychological reactions to stress and will introduce and implement physiological, cognitive, and behavioral stress management techniques.

## **809 - Social Science**

### **10809103 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.

## Course Descriptions

<b>10809122 Introduction to American Government (3 cr.)</b>	Introduces American political processes and institutions. Focuses on rights and responsibilities of citizens and the process of participatory democracy. Learners examine the complexity of the separation of powers and checks and balances. Explores the role of the media, interest groups, political parties and public opinion in the political process. Also explores the role of the state and national government in our federal system.
<b>10809123 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10809124 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10809125 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office. This course number is no longer reserved by the state office--March 2010.
<b>10809126 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10809128 Marriage &amp; Family (3 cr.)</b>	This course introduces the student to the sociological aspects of marriage and family life in contemporary American society. Emphasis is on the study of cognitive, emotional, and behavioral patterns associated with courtship, love, mate selection, sexuality, and marriage. Moreover, it discusses the life span development in the family life cycle, balancing work and family, and parenting. This course is based on the premise that human attitudes, feelings, and behaviors are largely shaped and influenced by philosophy, gender, communication, and personal beliefs. Therefore, success in the institutions of marriage and family require knowledge and skills in the roles of spouse and parent and ways to apply concepts to daily life.
<b>10809139 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10809140 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10809141 Course # Reserved by State (0 cr.)</b>	This course number has been reserved as a unique general education or statewide course number by the state office.
<b>10809143 Microeconomics (3 cr.)</b>	This course examines the behavior of individual decision makers, primarily consumers and firms. Topics include choices of how much to consume and to produce, the functioning of perfectly and imperfectly competitive markets, the conditions under which markets may fail, and arguments for and against government intervention. The student applies the fundamental tools of economics to real world problems.

## Course Descriptions

- 10809144 Macroeconomics (3 cr.)** Macroeconomics is an introductory course. Basic social choices regarding economic systems, basic economic aggregates, fiscal policy, the banking system, monetary policy, and international trade are the principle topics discussed in the course. Balance is drawn between theory, analysis, and a critique of the institutions that characterize modern mixed-capitalist economies. Conflicting social goals, economic constraints, and environmental concerns provide the framework through which the macroeconomy is analyzed.
- 10809154 Educational Psychology (3 cr.)** This course studies the process of human learning. Theories related to memory, learning, and intelligence are examined as well as the influence of social context and technology. Explores individual differences, motivations, and technology processes that facilitate learning.
- 10809159 Abnormal Psychology (3 cr.)** The course addresses the foundations of abnormal psychology and psychological disorders, including their characteristics, possible causes, assessments, diagnostic processes, and treatments. The course includes examination of major historical and theoretical perspectives, research, sociocultural considerations, and elements of psychological wellness.
- 10809166 Intro to Ethics: Theory & App (3 cr.)** This course provides a basic understanding of the theoretical foundations of ethical thought. Diverse ethical perspectives will be used to analyze and compare relevant issues. Students will critically evaluate individual, social and professional standards of behavior, and apply a systematic decision-making process to these situations.
- 10809172 Introduction to Diversity Studies (3 cr.)** This course introduces the study of diversity from a local to a global perspective using a holistic, interdisciplinary approach that encourages exploration and prepares students to work in a diverse environment. The course introduces basic diversity concepts, examines the impact of bias and power differentials among groups, explores the use of culturally responsive communication strategies, and compares forces that shape diversity in an international context.
- 10809174 Course # Reserved by State: Social Problems (0 cr.)** This course number has been reserved as a unique general education or statewide course number by the state office.
- 10809188 Developmental Psychology (3 cr.)** Developmental Psychology is the study of human development throughout the lifespan. This course explores developmental theory and research with an emphasis on the interactive nature of the biological, cognitive, and psychosocial changes that affect the individual conception to death. Application activities and critical thinking skills will enable students to gain an increased knowledge and understanding of themselves and others.

## Course Descriptions

<b>10809195 Economics (3 cr.)</b>	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.
<b>10809196 Intro to Sociology (3 cr.)</b>	Introduces students to the fundamental sociological concepts, including sociological perspectives, research methods, the significance of culture in society, and the socialization process. Other topics include deviance, the impact of groups on behavior, societal inequities, global changes, the role of social institutions, and social stratification.
<b>10809197 Contemporary Amer Society (3 cr.)</b>	Examine the network of interdependent social systems which affect learners as employees, family members, and citizens. In this interdisciplinary course, learners will study public policy issues which illustrate how our traditional institutions such as family, education, government, work, and media are being changed by global, political, demographic, multicultural, and technological trends. By exploring contemporary issues, learners will expand their use of creative and critical thinking skills in evaluating information, making decisions, advocating positions, and participating in the democratic process.
<b>10809198 Intro to Psychology (3 cr.)</b>	This science of psychology course is a survey of multiple aspects of behavior and mental processes. It provides an overview of topics such as research methods, theoretical perspectives, learning, cognition, memory, motivation, emotions, personality, abnormal psychology, physiological factors, social influences, and development.
<b>10809199 Psychology of Human Relations (3 cr.)</b>	Explores the relationship between the general principles of psychology and our everyday lives. Students are given the opportunity to achieve a deepened sense of awareness of themselves and others. This understanding enables students to improve their relationships with others at work, in the family, and in society.
<b>10809199E Psychology of Human Relations - Auto (3 cr.)</b>	Explores the relationship between the general principles of psychology and our everyday lives. Students are given the opportunity to achieve a deepened sense of awareness of themselves and others. This understanding enables students to improve their relationships with others at work, in the family, and in society.
<b>31809300 Human Relations (2 cr.)</b>	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.

## Course Descriptions

### **31809304 Workplace Diversity (2 cr.)**

Develops basic skills needed to work with diverse groups of people in the workplace.

### **50809500 Job Relations - Apprentice (1 cr.)**

Prepares students to deal effectively with people at all levels in the workplace by applying various human relations principles.

## **810 - Speech**

### **10810100 Spanish and Latin American Cinema (3 cr.)**

Explore a selection of compelling Latin American and Spanish films representing a diversity of countries, cultures, communities, identities, time periods, and genres. Analyze cinematic techniques and gain a deeper understanding of the films within their historical, social and political contexts.

## **831 - Gen College: Comm Skills**

### **10831103 Introduction to College Writing (3 cr.)**

Introduces basic principles of composition, including organization, development, unity, and coherence in paragraphs and multi-paragraph documents.

## **834 - Gen College: Mathematics**

### **10834109 Pre-Algebra (3 cr.)**

Provides an introduction to algebra. Includes operations on real numbers, solving linear equations, percent and proportion, and an introduction to graphing, measurement, geometry and statistics. Prepares students for elementary algebra and subsequent algebra related courses.

### **10834109A Pre-Algebra (3 cr.)**

Provides an introduction to algebra. Includes operations on real numbers, solving linear equations, percent and proportion, and an introduction to graphing, measurement, geometry and statistics. Prepares students for elementary algebra and subsequent algebra related courses.

## **836 - Gen College: Natural Science**

### **10836123 Prep for Anatomy & Physiology (2 cr.)**

Provides a general survey of the structure and function of the human body including chemistry, cells, tissues, organs and body systems. This course is intended for students who seek additional preparation for college level course work in anatomy and physiology.

### **10836133 Prep for Basic Chemistry (2 cr.)**

Introduces basic principles of chemistry including the properties of matter, atomic structure, and the classification of chemical reactions. Students learn to characterize solutions, acids, and bases, and differentiate between elements and compounds.

## **838 - Gen College: Reading**

### **10838105 Introduction to Reading and Study Skills (3 cr.)**

This course provides learners with opportunities to develop study skills and expand reading skills including comprehension, fluency, and vocabulary skills. Learners apply reading skills to academic tasks and read to acquire information from a variety of sources.

## **851 - GOAL English**

## Course Descriptions

<b>73851701 AE Writing Concepts 1 (5 cr.)</b>	Emphasizes writing simple notes and messages on familiar situations. Learners show some control of basic grammar and consistent use of punctuation.
<b>73851702 AE Reading Writing Comm Essentials 1 (5 cr.)</b>	Emphasizes reading and writing simple material on familiar subjects and comprehending and writing simple compound sentences in single or linked paragraphs containing familiar vocabulary.
<b>73851710 AE Writing Concepts 1 (2 cr.)</b>	Emphasizes writing simple notes and messages on familiar situations. Learners show some control of basic grammar and consistent use of punctuation.
<b>73851730 AE Reading Writing Comm Essentials 1 (2 cr.)</b>	Emphasizes reading and writing simple material on familiar subjects and comprehending and writing simple compound sentences in single or linked paragraphs containing familiar vocabulary.
<b>74851720 AE Writing Concepts 2 (5 cr.)</b>	Emphasizes basic writing tasks related to life roles such as completing medical forms, order forms, and job applications. Learners write short reports and messages to fellow workers. Learners self and peer edit for spelling and punctuation.
<b>74851721 AE Writing Concepts 3 (5 cr.)</b>	Emphasizes writing simple narrative descriptions and short essays on familiar topics. Learners complete forms such as job applications and strive for consistent use of basic grammar and punctuation.
<b>74851722 AE Reading Writing Comm Essentials 2 (5 cr.)</b>	Emphasizes reading text and basic writing skills on familiar subjects related to life roles that have a simple and clear underlying structure. Learners use context to determine meaning and can interpret actions required in specific directions. Learners write short reports and messages. Learners self and peer edit for spelling and punctuation.
<b>74851723 AE Accuplacer Writing Prep (5 cr.)</b>	Designed for students wishing to review basic skills related to sentence structure prior to taking the Accuplacer placement exam. The course will cover review of parts of speech, parallelism, punctuation, sentence fragmentation and agreement.
<b>74851724 AE Rdg Writing Comm Essentials 3 (5 cr.)</b>	Begins exploration of all aspects of literacy including critical reading, standards of English Conventions, analytical writing, speaking, interpersonal communication, and provides an overview of basic word processing.
<b>74851725 AE Rdg Writing Comm Essentials 4 (5 cr.)</b>	Continues exploration of all aspects of intermediate literacy including critical reading, standards of English Conventions, analytical writing, speaking, interpersonal communication, and provides an overview of word processing.
<b>74851726 AE Writing Concepts 4 (5 cr.)</b>	Emphasizes writing complete compound and complex sentences, personal notes, and letters that accurately reflect thoughts. Learners strive for writing that is organized and cohesive with few mechanical errors.

## Course Descriptions

<b>74851727 AE Individual Writing Skills 4 (5 cr.)</b>	Designed to provide instruction in various areas of writing. The course offers individualized, competency-based instruction to students who need to develop their writing skills and/or talents for any reason.
<b>74851740 AE Writing Concepts 2 (2 cr.)</b>	Emphasizes basic writing tasks related to life roles such as completing medical forms, order forms, and job applications. Learners write short reports and messages to fellow workers. Learners self and peer edit for spelling and punctuation.
<b>74851741 AE Writing Concepts 3 (2 cr.)</b>	Emphasizes writing simple narrative descriptions and short essays on familiar topics. Learners complete forms such as job applications and strive for consistent use of basic grammar and punctuation.
<b>74851742 AE Reading Writing Comm Essentials 2 (2 cr.)</b>	Emphasizes reading text and basic writing skills on familiar subjects related to life roles that have a simple and clear underlying structure. Learners use context to determine meaning and can interpret actions required in specific directions. Learners write short reports and messages. Learners self and peer edit for spelling and punctuation.
<b>74851743 AE Accuplacer Writing Prep (1 cr.)</b>	Designed for students wishing to review basic skills related to sentence structure prior to taking the Accuplacer placement exam. The course will cover review of parts of speech, parallelism, punctuation, sentence fragmentation and agreement.
<b>74851746 AE Reading Writing Comm Essentials 3 (2 cr.)</b>	Begins exploration of all aspects of literacy including critical reading, standards of English Conventions, analytical writing, speaking, interpersonal communication, and provides an overview of basic word processing.
<b>74851747 AE Reading Writing Comm Essentials 4 (2 cr.)</b>	Continues exploration of all aspects of intermediate literacy including critical reading, standards of English Conventions, analytical writing, speaking, interpersonal communication, and provides an overview of word processing.
<b>74851750 AE Writing Concepts 4 (2 cr.)</b>	Emphasizes writing complete compound and complex sentences, personal notes, and letters that accurately reflect thoughts. Learners strive for writing that is organized and cohesive with few mechanical errors.
<b>74851765 AE Individual Writing Skills 4 (2 cr.)</b>	Designed to provide instruction in various areas of writing. The course offers individualized, competency-based instruction to students who need to develop their writing skills and/or talents for any reason.
<b>77851750 AE Writing Strategies (5 cr.)</b>	Provides students with the skills and strategies required in Program Prep courses and beyond. Introduces aspects of developmental writing by exploring all stages of the writing process. Students will learn about grammar, sentence structure and style, MLA style and format, organization, and coherence. Students will leave the course with the ability to write single and multi-paragraph documents.

## Course Descriptions

<b>77851760 AE Writing Strategies (2 cr.)</b>	Provides students with the skills and strategies required in Program Prep courses and beyond. Introduces aspects of developmental writing by exploring all stages of the writing process. Students will learn about grammar, sentence structure and style, MLA style and format, organization, and coherence. Students will leave the course with the ability to write single and multi-paragraph documents.
<b>854 - GOAL Mathematics</b>	
<b>73854716 AE Math Essentials 2 (2 cr.)</b>	Begins preparation for students earning a GED/HSED by introducing whole numbers, calculator functions and problem solving techniques.
<b>73854720 AE Math Essentials 2 (5 cr.)</b>	Begins preparation for students earning a GED/HSED by introducing whole numbers, calculator functions and problem solving techniques.
<b>74854730 AE Accuplacer Math Prep (5 cr.)</b>	Designed for students wishing to review basic math skills prior to taking the Accuplacer placement exam. Covers whole numbers, fractions, decimals, ratios, proportions and percents.
<b>74854731 AE Individual Math Skills 4 (5 cr.)</b>	Provides customized, competency-based math instruction for students who need to improve math skills. This course is designed for instructors to customize math studies and create individual plans for students.
<b>74854732 AE Math for Occupations (5 cr.)</b>	Helps students gain an understanding of math concepts used in specific occupations. Course content may be customized.
<b>74854733 AE Math Prep Degree 3 (5 cr.)</b>	Prepares students for AE Math Prep for Degree Programs 4. Course content covers integers, solving equations, problem solving, fractions, mixed numbers, decimals, and integrated algebra concepts.
<b>74854734 AE Math Essentials 3 (5 cr.)</b>	Continue preparation for students earning a GED/HSED by covering decimals and fractions.
<b>74854735 AE Math Essentials 4 (5 cr.)</b>	Builds on GED/HSED math preparation by covering ratios, proportions, percents and data analysis.
<b>74854746 AE Accuplacer Math Prep (1 cr.)</b>	Designed for students wishing to review basic math skills prior to taking the Accuplacer placement exam. Covers whole numbers, fractions, decimals, ratios, proportions and percents.
<b>74854748 AE Individual Math Skills 4 (2 cr.)</b>	Provides customized, competency-based math instruction for students who need to improve math skills. This course is designed for instructors to customize math studies and create individual plans for students.
<b>74854749 AE Math for Occupations (2 cr.)</b>	Helps students gain an understanding of math concepts used in specific occupations. Course content may be customized.
<b>74854750 AE Math Prep for Degree Programs 3 (2 cr.)</b>	Prepares students for AE Math Prep for Degree Programs 4. Course content covers integers, solving equations, problem solving, fractions, mixed numbers, decimals, and integrated algebra concepts.
<b>74854751 AE Math Essentials 3 (2 cr.)</b>	Continue preparation for students earning a GED/HSED by covering decimals and fractions.

## Course Descriptions

**74854752 AE Math Essentials 4 (2 cr.)** Builds on GED/HSED math preparation by covering ratios, proportions, percents and data analysis.

### **856 - GOAL Science**

**74856730 AE Science Essentials (5 cr.)** Explores the basic scientific processes using multiple content applications from the life and physical sciences (including physics, chemistry, biology, earth science and environmental science).

**74856740 AE Science Essentials (2 cr.)** Explores the basic scientific processes using multiple content applications from the life and physical sciences (including physics, chemistry, biology, earth science and environmental science).

### **858 - GOAL Reading**

**73858701 AE Reading Concepts 1 (5 cr.)** Emphasizes reading simple material on familiar subjects and comprehending simple compound sentences in single or linked paragraphs containing a familiar vocabulary.

**73858702 AE Reading Concepts 2 (5 cr.)** Emphasizes reading text on familiar subjects that have a simple and clear underlying structure. Learners use context to determine meaning and can interpret actions required in specific directions.

**73858710 AE Reading Concepts 1 (2 cr.)** Emphasizes reading simple material on familiar subjects and comprehending simple compound sentences in single or linked paragraphs containing a familiar vocabulary.

**73858711 AE Reading Concepts 2 (2 cr.)** Emphasizes reading text on familiar subjects that have a simple and clear underlying structure. Learners use context to determine meaning and can interpret actions required in specific directions.

**74858730 AE Reading Concepts 3 (5 cr.)** Provides focused instruction in the four fundamentals of intermediate reading: alphabets (phonics), fluency, vocabulary, and comprehension. Students are assessed individually and a prescriptive instructional plan, addressing each student's profile is developed.

**74858731 AE Reading Concepts 4 (5 cr.)** Provides focused instruction in the four fundamentals of intermediate reading-alphabets (phonics), fluency, vocabulary and comprehension. Students are assessed individually and a prescriptive instructional plan addressing each student's profile is developed.

**74858732 AE Personal Financial Basics (5 cr.)** Provides students with essential information about banking, credit, budgeting, financial planning and consumer skills.

**74858733 AE Accuplacer Reading Prep (5 cr.)** Designed for students wishing to review basic reading skills prior to taking the Accuplacer placement exam. The course will cover review of reading strategies such as main idea, supporting detail, purpose and tone, and implied main idea as well as vocabulary development.

## Course Descriptions

<b>74858734 AE Indiv Reading Skills 4 (5 cr.)</b>	Provides instruction for students who wish to improve specific spelling, vocabulary, reading and/or study skills. Students select area of concentration.
<b>74858741 AE Reading Concepts 3 (2 cr.)</b>	Provides focused instruction in the four fundamentals of intermediate reading: alphabets (phonics), fluency, vocabulary, and comprehension. Students are assessed individually and a prescriptive instructional plan, addressing each student's profile is developed.
<b>74858745 AE Reading Concepts 4 (2 cr.)</b>	Provides focused instruction in the four fundamentals of intermediate reading-alphabets (phonics), fluency, vocabulary and comprehension. Students are assessed individually and a prescriptive instructional plan addressing each student's profile is developed.
<b>74858751 AE Personal Financial Basics (2 cr.)</b>	Provides students with essential information about banking, credit, budgeting, financial planning and consumer skills.
<b>74858752 AE Accuplacer Reading Prep (1 cr.)</b>	Designed for students wishing to review basic reading skills prior to taking the Accuplacer placement exam. The course will cover review of reading strategies such as main idea, supporting detail, purpose and tone, and implied main idea as well as vocabulary development.
<b>74858762 AE Individual Reading Skills 4 (2 cr.)</b>	Provides instruction for students who wish to improve specific spelling, vocabulary, reading and/or study skills. Students select area of concentration.
<b>74858766 AE Personal Financial Basics (5 cr.)</b>	Provides students with essential information about banking, credit, budgeting, financial planning and consumer skills.
<b>77858740 AE Individual Reading Skills 6 (5 cr.)</b>	Provides instruction for students who wish to improve specific spelling, vocabulary, reading and/or study skills. Students select areas of concentration and develop individual study plans with reading instructors.
<b>77858745 AE Reading Strategies (5 cr.)</b>	Prepares students for the reading skills and strategies required in Program Prep courses. The course includes vocabulary development, study skills units, reading comprehension principles, reading rate development, and comprehension practice. It is also appropriate for individuals, not enrolled in programs, who wish to take the course for personal enrichment or high school credit.
<b>77858750 AE Individual Reading Skills 6 (2 cr.)</b>	Provides instruction for students who wish to improve specific spelling, vocabulary, reading and/or study skills. Students select areas of concentration and develop individual study plans with reading instructors.

## Course Descriptions

**77858760 AE Reading Strategies (2 cr.)** Prepares students for the reading skills and strategies required in Program Prep courses. The course includes vocabulary development, study skills units, reading comprehension principles, reading rate development, and comprehension practice. It is also appropriate for individuals, not enrolled in programs, who wish to take the course for personal enrichment or high school credit.

### **859 - GOAL Social Science**

**74859730 AE Social Studies Essentials (5 cr.)** Focuses on US History, World History, geography, economics, and political science. Includes basic study skills.

**74859731 AE Civics (5 cr.)** Explores governmental structures at the national, state and local level. Through analyzing our government's ideals, principles and practices, students who complete this course will have a better understanding of how government works and how they can participate in that government.

**74859741 AE Social Studies Essentials (2 cr.)** Focuses on US History, World History, geography, economics, and political science. Includes basic study skills.

**74859743 AE Civics (2 cr.)** Explores governmental structures at the national, state and local level. Through analyzing our government's ideals, principles and practices, students who complete this course will have a better understanding of how government works and how they can participate in that government.

### **860 - Computer Basics**

**74860705 AE Computer Literacy (5 cr.)** Provides an introduction to basic computer operation, such as turning the computer on, using a mouse, using basic programs (such as Word), using e-mail and searching the Internet.

**74860706 AE Wkplc Ready/Comp/Fin Lit (5 cr.)** Establish employability skills for entry level program students and employment seekers. A survey of basic computer skills including: identifying computer devices, using keyboard skills effectively, creating and editing documents in WORD, and performing email functions, is included in this course. Along with basic computer skills, a set of personal financial basic skills are covered. The financial skills covered are: Financial Fundamentals, Employment, Money Management, Budgeting, and Saving.

**74860707 AE Digital Literacy (5 cr.)** Provided for incoming and returning Adult Education students who need digital literacy orientation and development. Students will learn the basic functions of computers and their phones to access education and develop digital learning skills. In addition, students will learn to use FVTC's LMS system: Blackboard, Collaborate, Workday, FVTC Website resources, basics of email, and document sharing.

**74860740 AE Computer Literacy (2 cr.)** Provides an introduction to basic computer operation, such as turning the computer on, using a mouse, using basic programs (such as Word), using e-mail and searching the Internet.

## Course Descriptions

**74860743 AE Workplace  
Readiness/Computer/Financial Lit (1 cr.)**

Establish employability skills for entry level program students and employment seekers. A survey of basic computer skills including: identifying computer devices, using keyboard skills effectively, creating and editing documents in WORD, and performing email functions, is included in this course. Along with basic computer skills, a set of personal financial basic skills are covered. The financial skills covered are: Financial Fundamentals, Employment, Money Management, Budgeting, and Saving.

**74860744 AE Digital Literacy (1 cr.)**

Provided for incoming and returning Adult Education students who need digital literacy orientation and development. Students will learn the basic functions of computers and their phones to access education and develop digital learning skills. In addition, students will learn to use FVTC's LMS system: Blackboard, Collaborate, MyFVTC, FVTC Website resources, basics of email, and document sharing.

### **861 - English Language Learning**

**75861700 ELL Oral 1 (2 cr.)**

Introduces basic vocabulary acquisition for everyday use in the workplace and community to non-English speaking students. Students orally practice basic sentence structure, pronunciation, listening skills, and asking and answering questions.

**75861701 ELL Reading and Writing 1 (2 cr.)**

Presents basic reading techniques to non-English speaking students. Students are introduced to basic sight words, dictation and the words to use when giving personal information. Basic writing of numbers and letters is introduced. The course also reinforces basic rules of writing (punctuation, the use of capital and lowercase letters, grammar, etc.) and trains students in a variety of sentence types (affirmative, negative and interrogative) and writing forms such as copying, listing and labeling concrete terms, and filling in simple autobiographical information.

**75861702 ELL Writing & Grammar 1 (2 cr.)**

Provides additional practice in reading, writing, grammar, pronunciation and listening. Multimedia materials are used to enhance the learning of basic language vocabulary and structure.

**75861703 ELL Integrated English Skills 1 (2 cr.)**

Focuses on the skills needed for English listening and speaking, reading and writing, grammar, and vocabulary in an integrated approach. The use of multimedia will aid in acquiring skills based on Level 1 competencies.

**75861704 ELL Family Literacy 1 (2 cr.)**

Introduces basic reading and vocabulary acquisition within the context of family, school and community. Parents have opportunities to spend time with their children in an educational setting. Issues of concern for parents are addressed through parenting instruction.

## Course Descriptions

- 75861706 ELL American English 1 (2 cr.)** Provides flexible instruction for students who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.
- 75861707 ELL English Literacy Civics - Fieldtrip 1 (2 cr.)** Offers limited English speakers the opportunity to experience firsthand how to interact with the most important civic organizations in our community. Students will learn about the local and state government, fire department, police department and meet city officials. Students will also visit libraries, financial institutions, housing authorities, healthcare providers, legal institutions and participate in activities centered on family. Students will also learn about the partnership with the Multicultural Center and other cultural community organizations and participate in their activities.
- 75861708 ELL English Literacy Civics - Fieldtrip 2 (2 cr.)** Offers limited English speakers the opportunity to experience firsthand how to interact with the most important civic organizations in our community. Students will learn about the local and state government, fire department, police department and meet city officials. Students will also visit libraries, financial institutions, housing authorities, healthcare providers, legal institutions and participate in activities centered on family. Students will also learn about the partnership with the Multicultural Center and other cultural community organizations and participate in their activities.
- 75861709 ELL Workplace Strategies 1 (2 cr.)** Provides survival English for non-English speaking individuals who have entered the workforce. Emphasis is on vocabulary needed on the job. Employees are introduced to basic grammar and reading concepts.
- 75861710 ELL Oral 2 (2 cr.)** Continues the use of vocabulary for the workplace and the community. Students practice basic conversations, pronunciation and listening skills for language acquisition.
- 75861711 ELL Reading and Writing 2 (2 cr.)** Continues instruction in basic reading techniques. Students use common reading materials and work at recognizing and reading basic sight words. Students also learn how to produce simple sentences and basic paragraphs using familiar materials while utilizing appropriate grammar and correct punctuation.
- 75861712 ELL Writing & Grammar 2 (2 cr.)** Provides additional practice of sentence structure using language patterns and rules of grammar. A variety of multimedia materials are available to enhance vocabulary, listening and pronunciation.
- 75861713 ELL Integrated English Skills 2 (2 cr.)** Focuses on the skills needed for English listening and speaking, reading and writing, grammar, and vocabulary in an integrated approach. The use of multimedia will aid in acquiring skills based on Level 2 competencies.

## Course Descriptions

<b>75861714 ELL Family Literacy 2 (2 cr.)</b>	Continues with basic reading techniques. Parents practice conversations and pronunciation, and develop vocabulary within the context of family, school and community. They have opportunities to spend time with their children in an educational setting. Parenting issues are addressed.
<b>75861715 English for the Workplace (2 cr.)</b>	Designed for ELL students, the focus in this course is on language development and field-centered vocabulary necessary to understand workplace terminology and employment practices. Disciplines covered are: Agriculture, Landscaping, Construction, and Manufacturing. Focuses on job topics that improve listening, speaking, reading, writing, and computer skills necessary for job success.
<b>75861716 ELL American English 2 (2 cr.)</b>	Provides flexible instruction students who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.
<b>75861717 ELL Conversation Learning Circle (2 cr.)</b>	Gathering of students who come together to improve their language skills. This class is provided for language learners to practice vocabulary, pronunciation, and grammar in a fun and comfortable environment. It uses sustained speech in short explanations, short discussions, and dialogues. This, in turn, transfers to the workplace, the community, and educational settings.
<b>75861718 ELL English Literacy Civics - Fieldtrip 3 (2 cr.)</b>	Offers limited English speakers the opportunity to experience firsthand how to interact with the most important civic organizations in our community. Students will learn about the local and state government, fire department, police department and meet city officials. Students will also visit libraries, financial institutions, housing authorities, healthcare providers, legal institutions and participate in activities centered on family. Students will also learn about the partnership with the Multicultural Center and other cultural community organizations and participate in their activities.
<b>75861719 ELL Workplace Strategies 2 (2 cr.)</b>	Teaches oral language, reading and grammar, as well as numerical vocabulary and thinking in English. Emphasis is given to vocabulary, pronunciation, sentence structure, correctness of oral form, asking and answering questions, reading sign words, learning key decoding skills, and written work, both generic and related to the workplace. Participants learn the language necessary to do computation and word problems.
<b>75861720 ELL Oral 3 (2 cr.)</b>	Expands a student's workplace and community vocabulary including idioms and expressions. The student initiates conversations with others as well as listens for clarification. He/she demonstrates the use of language patterns and the rules of grammar for the competencies at this level.

## Course Descriptions

<b>75861721 ELL Reading and Writing 3 (2 cr.)</b>	Identifies main ideas and supporting details. Students analyze compound words, read experiential stories, and infer meaning. They compose short paragraphs in several rhetorical styles and basic workplace reports using simple grammatical structures.
<b>75861722 ELL Writing &amp; Grammar 3 (2 cr.)</b>	Provides additional practice of vocabulary, pronunciation, grammar and listening for language acquisition in a multimedia environment.
<b>75861723 ELL CALL 1 (Computer Assist Language Learn) (5 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will learn and use a wide range of programs such as Blackboard, Microsoft Word, Web-based materials, multimedia, and content-based instruction to strengthen reading, writing, grammar, and vocabulary.
<b>75861724 ELL Family Literacy 3 (2 cr.)</b>	Focuses on having parents read and understand materials pertinent to their children's education and social welfare. The emphasis is on continued vocabulary development, initiating conversations, and listening and understanding skills, all within the context of family, school and community. Parents participate in parent/child time and parenting discussions.
<b>75861725 ELL CALL 6 (Computer Assist Language Learn) (5 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will use a wide range of software as well as Web-based material, multimedia and content-based instruction to strengthen reading, writing, grammar, vocabulary, pronunciation, listening and speaking. Completion of ELL Reading and Vocabulary 5 or ELL Oral 5 is recommended.
<b>75861726 ELL Conversation Learning Circle (5 cr.)</b>	Gathering of students who come together to improve their language skills. This class is provided for language learners to practice vocabulary, pronunciation, and grammar in a fun and comfortable environment. It uses sustained speech in short explanations, short discussions, and dialogues. This, in turn, transfers to the workplace, the community, and educational settings.
<b>75861727 ELL Writing 3 (1 cr.)</b>	This is a short, intensive course in which students learn how to produce short letters and paragraphs using simple grammatical structures. New students, prior to registration, contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.
<b>75861728 ELL American English 5 (5 cr.)</b>	Provides flexible instruction for student who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.

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- 75861729 ELL Workplace Strategies 3 (2 cr.)** Expands English competencies in oral communication, reading, grammar and problem solving for those who have attained the basics. Participants will be presented with both employment language skills and those needed for continued education.
- 75861730 ELL Digital Literacy (1 cr.)** Provided for incoming and returning ELL students who need digital literacy orientation and development. Students will learn the basic functions of computers, Chromebooks, and their phones to access education and develop digital learning skills. In addition, students will learn to use FVTC's LMS system: Blackboard and Collaborate. They will also be introduced to our online curriculum, Burlington English, by logging on and learning to navigate the system.
- 75861731 ELL American English 6 (5 cr.)** Provides flexible instruction for student who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.
- 75861732 ELL American English 3 (5 cr.)** Provides flexible instruction for student who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.
- 75861733 ELL Healthcare Terminology (2 cr.)** Provides linguistic assistance to students who are non-native speakers of English so that they can have full comprehension of the classroom and laboratory instruction and supervised clinical practice in local health care institutions. Assists students to complete the course successfully and prepares students for the certification exam at the end of the course.
- 75861734 ELL Continuation (2 cr.)** Provides re-entry into ELL classes at FVTC. The student will reflect on their educational plans and register for appropriate ELL classes. This course is the continuing step for students seeking language acquisition skills, personal enrichment and career growth.
- 75861735 ELL Family Literacy 1 (5 cr.)** Introduces basic reading and vocabulary acquisition within the context of family, school and community. Parents have opportunities to spend time with their children in an educational setting. Issues of concern for parents are addressed through parenting instruction.
- 75861736 ELL American English 3 (2 cr.)** Provides flexible instruction for student who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.
- 75861737 ELL American English 1 (5 cr.)** Provides flexible instruction for students who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.

## Course Descriptions

<b>75861738 ELL American English 2 (5 cr.)</b>	Provides flexible instruction students who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.
<b>75861739 ELL Workplace Strategies 6 (2 cr.)</b>	Expands advanced workplace reading, writing, and speaking skills. Participants will acquire workplace vocabulary and concepts that focus on job placement and promotion as well as FVTC program success.
<b>75861740 ELL CALL 5 (Computer Assist Language Learn) (5 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will learn and use a wide range of programs such as Blackboard, Microsoft Word, Web-based materials, multimedia, and content-based instruction to strengthen reading, writing, grammar, and vocabulary.
<b>75861741 ELL English Literacy Civics - Fieldtrip 4 (2 cr.)</b>	Offers limited English speakers the opportunity to experience firsthand how to interact with the most important civic organizations in our community. Students will learn about the local and state government, fire department, police department and meet city officials. Students will also visit libraries, financial institutions, housing authorities, healthcare providers, legal institutions and participate in activities centered on family. Students will also learn about the partnership with the Multicultural Center and other cultural community organizations and participate in their activities.
<b>75861742 ELL English Literacy Civics - Fieldtrip 5 (2 cr.)</b>	Offers limited English speakers the opportunity to experience firsthand how to interact with the most important civic organizations in our community. Students will learn about the local and state government, fire department, police department and meet city officials. Students will also visit libraries, financial institutions, housing authorities, healthcare providers, legal institutions and participate in activities centered on family. Students will also learn about the partnership with the Multicultural Center and other cultural community organizations and participate in their activities.
<b>75861743 ELL English Literacy Civics - Fieldtrip 6 (2 cr.)</b>	Offers limited English speakers the opportunity to experience firsthand how to interact with the most important civic organizations in our community. Students will learn about the local and state government, fire department, police department and meet city officials. Students will also visit libraries, financial institutions, housing authorities, healthcare providers, legal institutions and participate in activities centered on family. Students will also learn about the partnership with the Multicultural Center and other cultural community organizations and participate in their activities.

## Course Descriptions

<b>75861744 ELL Integrated English Skills 3 (2 cr.)</b>	Focuses on the skills needed for English listening and speaking, reading and writing, grammar, and vocabulary in an integrated approach. The use of multimedia will aid in acquiring skills based on Level 3 competencies.
<b>75861745 ELL Grammar 4 (2 cr.)</b>	Introduces grammar concepts in a classroom setting. Students examine grammar according to the state competencies for grammar at level 4. Students will then use the correct grammar in various skill areas. Completion of ELL Grammar 3 (75-861-822) recommended.
<b>75861746 ELL American English 4 (2 cr.)</b>	Provides flexible instruction for student who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.
<b>75861747 ELL Family Literacy 2 (5 cr.)</b>	Continues with basic reading techniques. Parents practice conversations and pronunciation, and develop vocabulary within the context of family, school and community. They have opportunities to spend time with their children in an educational setting. Parenting issues are addressed.
<b>75861748 ELL Family Literacy 3 (5 cr.)</b>	Focuses on having parents read and understand materials pertinent to their children's education and social welfare. The emphasis is on continued vocabulary development, initiating conversations, and listening and understanding skills, all within the context of family, school and community. Parents participate in parent/child time and parenting discussions.
<b>75861749 ELL CALL (Comp. Assist Language Learning) 4 (2 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will learn and use a wide range of programs such as Blackboard, Microsoft Word, Web-based materials, multimedia, and content-based instruction to strengthen reading, writing, grammar, and vocabulary.Â Â
<b>75861750 ELL Oral 4 (2 cr.)</b>	Presents sustained speech in short explanations, classroom discussions and dialogues. These skills transfer to the workplace, the community and educational settings. The student demonstrates the use of language patterns and rules of grammar for the competencies of this level.
<b>75861751 ELL Reading and Writing 4 (2 cr.)</b>	Develops fluency and introduces students to such materials as textbooks, job applications, magazines, and newspapers. The student employs a variety of comprehension strategies such as reading literally, reading critically to evaluate, comparing and contrasting, and inferring feelings and attitudes. Students also learn how to take notes effectively in class and they write extended or in-depth paragraphs in various genres. They also read and analyze essays.
<b>75861752 ELL Writing &amp; Grammar 4 (2 cr.)</b>	Provides additional practice of sentence structure using language patterns and rules of grammar. A variety of multimedia materials are available to enhance vocabulary.

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- 75861753 ELL Family Literacy 4 (5 cr.)** Recognizes different kinds of languages such as formal and informal. Adult learners read critically and participate in discussion and dialogues, all within the context of school, home and community. Parents participate in parent/child time and parenting discussions.
- 75861754 ELL Family Literacy 4 (2 cr.)** Recognizes different kinds of languages such as formal and informal. Adult learners read critically and participate in discussion and dialogues, all within the context of school, home and community. Parents participate in parent/child time and parenting discussions.
- 75861755 ELL Family Literacy 5 (5 cr.)** Employs active listening skills, develops vocabulary building skills, uses formal and informal conversational language all within the context of school, home and community. Participates in parent/child time and parenting discussions.
- 75861756 ELL English Literacy Civics - Fieldtrip 7 (2 cr.)** Offers limited English speakers the opportunity to experience firsthand how to interact with the most important civic organizations in our community. Students will learn about the local and state government, fire department, police department and meet city officials. Students will also visit libraries, financial institutions, housing authorities, healthcare providers, legal institutions and participate in activities centered on family. Students will also learn about the partnership with the Multicultural Center and other cultural community organizations and participate in their activities.
- 75861757 ELL Integrated English Skills 4 (2 cr.)** Focuses on the skills needed for English listening and speaking, reading and writing, grammar, and vocabulary in an integrated approach. The use of multimedia will aid in acquiring skills based on Level 4 competencies.
- 75861758 ELL English Literacy Civics - Fieldtrip 8 (2 cr.)** Offers limited English speakers the opportunity to experience firsthand how to interact with the most important civic organizations in our community. Students will learn about the local and state government, fire department, police department and meet city officials. Students will also visit libraries, financial institutions, housing authorities, healthcare providers, legal institutions and participate in activities centered on family. Students will also learn about the partnership with the Multicultural Center and other cultural community organizations and participate in their activities.
- 75861759 ELL Workplace Strategies 4 (2 cr.)** Focuses on advanced conversation and writing skills. Participants will learn culture-bound and idiomatic language, multiple definitions and contextual importance, and pronunciation subtleties. They will use both generic and work-based situations. Students will continue to expand their writing skills.

## Course Descriptions

<b>75861760 ELL Multimedia Lab for Independent Study (1 cr.)</b>	Provides a student with additional options to enhance listening, writing, pronunciation, keyboarding, grammar, and TABE test preparations and testing in an independent Multimedia Lab for levels 1-6.
<b>75861761 ELL Family Literacy 6 (5 cr.)</b>	Responds to listening situations, speaks understandably, responds critically to reading materials all within the context of school, home and community. Participates in parent/child time and parenting discussions.
<b>75861762 ELL Writing 4 (1 cr.)</b>	This is a short, intensive course in which students learn how to take notes effectively in class and to write short essays which are comprehensible to native speakers of English. New students, prior to registration, contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English,
<b>75861763 ELL Healthcare Terminology (5 cr.)</b>	Provides linguistic assistance to students who are non-native speakers of English so that they can have full comprehension of the classroom and laboratory instruction and supervised clinical practice in local health care institutions. Assists students to complete the course successfully and prepares students for the certification exam at the end of the course.
<b>75861764 ELL CALL 4 (Computer Assist Language Learn) (5 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will learn and use a wide range of programs such as Blackboard, Microsoft Word, Web-based materials, multimedia, and content-based instruction to strengthen reading, writing, grammar, and vocabulary.
<b>75861766 ELL American English 5 (2 cr.)</b>	Provides flexible instruction for student who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.
<b>75861767 ELL Literacy Oral (5 cr.)</b>	Provides students an opportunity to listen and speak English at the foundation level. Students will be introduced to vocabulary such as numbers, colors, food, clothing, household, school, and community through pictures. In addition, students will learn to identify, produce, and pronounce the English alphabet and basic foundation words. As a result, students will be prepared for ELL Level 1 courses in speaking, listening, reading and writing.
<b>75861768 ELL Grammar 5 (2 cr.)</b>	Introduces grammar concepts in a classroom setting. Students examine grammar according to the state competencies for grammar at level 5. Students will then use the correct grammar in various skill areas. Completion of Grammar 4 (75-861-745) recommended.

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<b>75861769 ELL CALL (Comp. Assist Language Learning) 5 (2 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will learn and use a wide range of programs such as Blackboard, Microsoft Word, Web-based materials, multimedia, and content-based instruction to strengthen reading, writing, grammar, and vocabulary.
<b>75861770 ELL Oral 5 (2 cr.)</b>	Focuses on formal and informal conversational language using a variety of structural patterns. The student reiterates stories, situations and conversations and demonstrates the use of grammar according to the competencies for Level 5 Grammar.
<b>75861771 ELL Reading and Writing 5 (2 cr.)</b>	Demonstrates students' comprehension of a wide range of printed and electronic materials. Students use a variety of comprehension strategies and read literally, inferentially, and critically. They also skim and scan texts. Test-taking strategies and study skills are incorporated. Students also learn how summarize, analyze, and synthesize information into the essay format using MLA or APA styles.
<b>75861772 ELL Writing &amp; Grammar 5 (2 cr.)</b>	Provides additional practice of sentence structure using language patterns and rules of grammar. A variety of multimedia materials are available to enhance vocabulary.
<b>75861773 ELL Literacy Writing (5 cr.)</b>	Provides students an opportunity to learn to write in English at the foundation level. Students will be introduced to vocabulary such as numbers, colors, food, clothing, household, school, and community through pictures. In addition, students will learn to write the English alphabet, their names, and basic foundation words. As a result, students will be prepared for ELL Level 1 courses in speaking, listening, reading and writing.
<b>75861774 ELL Family Literacy 5 (2 cr.)</b>	Employs active listening skills, develops vocabulary building skills, uses formal and informal conversational language all within the context of school, home and community. Participates in parent/child time and parenting discussions.
<b>75861775 ELL Grammar 1 (5 cr.)</b>	Helps students learn a foundation of fundamental English grammar through which they will have better comprehension when they engage in reading, writing, speaking, and listening activities. New students, prior to registration, contact 920-236-6187 for an assessment to determine your proficiency in English.
<b>75861776 ELL CALL 2 (Computer Assist Language Learn) (5 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will learn and use a wide range of programs such as Blackboard, Microsoft Word, Web-based materials, multimedia, and content-based instruction to strengthen reading, writing, grammar, and vocabulary.

## Course Descriptions

<b>75861777 ELL CALL 3 (Computer Assist Language Learn) (5 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will learn and use a wide range of programs such as Blackboard, Microsoft Word, Web-based materials, multimedia, and content-based instruction to strengthen reading, writing, grammar, and vocabulary.
<b>75861778 ELL American English 4 (5 cr.)</b>	Provides flexible instruction for student who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.
<b>75861779 ELL Workplace Strategies 5 (2 cr.)</b>	Expands advanced conversation and writing abilities. Participants will develop English skills, which incorporate the nuances of the language. Both generic and workplace situations are used.
<b>75861780 ELL Grammar 2 (5 cr.)</b>	Introduces grammar concepts in a classroom setting. Students examine grammar according to the state competencies for grammar at level 2. Students will then use the correct grammar in various skill areas. Completion of ELL Reading and Vocabulary 1 is recommended.
<b>75861781 ELL Grammar 3 (5 cr.)</b>	Introduces grammar concepts in a classroom setting. Students examine grammar according to the state competencies for grammar at level 3. Students will then use the correct grammar in various skill areas. Completion of ELL Grammar 2 is recommended.
<b>75861782 ELL Grammar 4 (5 cr.)</b>	Introduces grammar concepts in a classroom setting. Students examine grammar according to the state competencies for grammar at level 4. Students will then use the correct grammar in various skill areas. Completion of ELL Grammar 3 is recommended.
<b>75861790 ELL Oral 6 (2 cr.)</b>	Participates in group presentations, gives an individual presentation for class and the public, and also participates in interviews. Demonstrates control of grammar according to the criteria under the ELL Level 6 Competencies.
<b>75861791 ELL Reading and Writing 6 (2 cr.)</b>	Improves students' ability to read graphs, technical reports, literature, newspapers, magazines and instructional manuals, among other documents. Students read critically and inferentially and adjust their reading rate. Students also learn to write at a collegiate level utilizing various rhetorical styles. Research techniques and report writing prepare students for writing at the college level.
<b>75861792 ELL Writing &amp; Grammar 6 (2 cr.)</b>	Provides additional practice of sentence structure using language patterns and rules of grammar. A variety of multimedia materials are available to enhance vocabulary.

## Course Descriptions

<b>75861793 ELL Grammar 5 (5 cr.)</b>	Introduces grammar concepts in a classroom setting. Students examine grammar according to the state competencies for grammar at level 5. Students will then use the correct grammar in various skill areas. Completion of Grammar 4 is recommended.
<b>75861794 ELL Family Literacy 6 (2 cr.)</b>	Responds to listening situations, speaks understandably, responds critically to reading materials all within the context of school, home and community. Participates in parent/child time and parenting discussions.
<b>75861795 ELL Grammar 6 (5 cr.)</b>	Introduces grammar concepts in a classroom setting. Students examine grammar according to the state competencies for grammar at level 6. Students will then use the correct grammar in various skill areas. Completion of ELL Grammar 5 is recommended.
<b>75861796 ELL American English 6 (2 cr.)</b>	Provides flexible instruction for student who may engage in Reading, Speaking, Writing, Grammar or Punctuation at their level of competency. The needs of the class will determine the coursework.
<b>75861797 ELL CALL (Comp. Assist Language Learning) 6 (2 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will use a wide range of software as well as Web-based material, multimedia and content-based instruction to strengthen reading, writing, grammar, vocabulary, pronunciation, listening and speaking. Completion of ELL Reading and Vocabulary 5 (75-861-771) or ELL Oral 5 (75-861-770) is recommended.
<b>75861799 ELL Citizenship 6 (2 cr.)</b>	Introduces the student to the rights and responsibilities of becoming a citizen. Governmental systems within in the U.S. (national, state and local) are introduced. New students, prior to registration, contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.
<b>75861800 ELL First Steps to Success (2 cr.)</b>	Provides entry into ELL classes at FVTC. The student considers educational plans and registers for appropriate ELL classes. This course is the initial step for students seeking language acquisition skills, personal enrichment and career growth.
<b>75861803 ELL CALL (Comp. Assist Language Learning) 1 (2 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will learn and use a wide range of programs such as Blackboard, Microsoft Word, Web-based materials, multimedia, and content-based instruction to strengthen reading, writing, grammar, and vocabulary.Â Â

## Course Descriptions

<b>75861804 ELL Writing 1 (1 cr.)</b>	This is a short, intensive course which reinforces basic rules of writing (punctuation, the use of capital and lowercase letters, grammar, etc.) and trains students in a variety of sentence types (affirmative, negative and interrogative) and writing forms such as copying, listing and labeling concrete terms, and filling in simple autobiographical information. New students, prior to registration, contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.
<b>75861805 ELL Grammar 1 (2 cr.)</b>	Helps students learn a foundation of fundamental English grammar through which they will have better comprehension when they engage in reading, writing, speaking, and listening activities. New students, prior to registration, contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.
<b>75861810 ELL Integrated English Skill 1 (5 cr.)</b>	Focuses on the skills needed for English listening and speaking, reading and writing, grammar, and vocabulary in an integrated approach. The use of multimedia will aid in acquiring skills based on Level 1 competencies.
<b>75861811 ELL Grammar 2 (2 cr.)</b>	Introduces grammar concepts in a classroom setting. Students examine grammar according to the state competencies for grammar at level 2. Students will then use the correct grammar in various skill areas. Completion of ELL Reading and Vocabulary 1 (75-861-701) recommended.
<b>75861812 ELL CALL (Comp. Assist Language Learning) 2 (2 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will learn and use a wide range of programs such as Blackboard, Microsoft Word, Web-based materials, multimedia, and content-based instruction to strengthen reading, writing, grammar, and vocabulary.Â Â
<b>75861813 ELL Writing 2 (1 cr.)</b>	This is a short, intensive course in which students learn how to produce simple sentences using familiar materials while utilizing appropriate grammar and correct punctuation. New students, prior to registration, contact 920-735-2443 in Appleton or 920-236-6183 in Oshkosh for an assessment to determine your proficiency in English.
<b>75861820 ELL Integrated English Skill 2 (5 cr.)</b>	Focuses on the skills needed for English listening and speaking, reading and writing, grammar, and vocabulary in an integrated approach. The use of multimedia will aid in acquiring skills based on Level 2 competencies.
<b>75861821 ELL Integrated English Skill 3 (5 cr.)</b>	Focuses on the skills needed for English listening and speaking, reading and writing, grammar, and vocabulary in an integrated approach. The use of multimedia will aid in acquiring skills based on Level 3 competencies.

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<b>75861822 ELL Grammar 3 (2 cr.)</b>	Introduces grammar concepts in a classroom setting. Students examine grammar according to the state competencies for grammar at level 3. Students will then use the correct grammar in various skill areas. Completion of ELL Grammar 2 (75-861-811) recommended.
<b>75861823 ELL CALL (Comp. Assist Language Learning) 3 (2 cr.)</b>	Focuses on guiding students through language activities using computer-based tasks. Students will learn and use a wide range of programs such as Blackboard, Microsoft Word, Web-based materials, multimedia, and content-based instruction to strengthen reading, writing, grammar, and vocabulary.
<b>75861824 ELL Integrated English Skill 4 (5 cr.)</b>	Focuses on the skills needed for English listening and speaking, reading and writing, grammar, and vocabulary in an integrated approach. The use of multimedia will aid in acquiring skills based on Level 4 competencies.
<b>75861825 ELL Oral 1 (5 cr.)</b>	Introduces basic vocabulary acquisition for everyday use in the workplace and community to non-English speaking students. Students orally practice basic sentence structure, pronunciation, listening skills, and asking and answering questions.
<b>75861826 ELL Oral 2 (5 cr.)</b>	Continues the use of vocabulary for the workplace and the community. Students practice basic conversations, pronunciation and listening skills for language acquisition.
<b>75861827 ELL Oral 3 (5 cr.)</b>	Expands a student's workplace and community vocabulary including idioms and expressions. The student initiates conversations with others as well as listens for clarification. He/she demonstrates the use of language patterns and the rules of grammar for the competencies at this level.
<b>75861828 ELL Oral 4 (5 cr.)</b>	Presents sustained speech in short explanations, classroom discussions and dialogues. These skills transfer to the workplace, the community and educational settings. The student demonstrates the use of language patterns and rules of grammar for the competencies of this level.
<b>75861829 ELL Oral 5 (5 cr.)</b>	Focuses on formal and informal conversational language using a variety of structural patterns. The student reiterates stories, situations and conversations and demonstrates the use of grammar according to the competencies for Level 5 Grammar.
<b>75861830 ELL Oral 6 (5 cr.)</b>	Participates in group presentations, gives an individual presentation for class and the public, and also participates in interviews. Demonstrates control of grammar according to the criteria under the ELL Level 6 Competencies.

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<b>75861831 ELL Reading and Writing 1 (5 cr.)</b>	Presents basic reading techniques to non-English speaking students. Students are introduced to basic sight words, dictation and the words to use when giving personal information. Basic writing of numbers and letters is introduced. The course also reinforces basic rules of writing (punctuation, the use of capital and lowercase letters, grammar, etc.) and trains students in a variety of sentence types (affirmative, negative and interrogative) and writing forms such as copying, listing and labeling concrete terms, and filling in simple autobiographical information.
<b>75861832 ELL Reading and Writing 2 (5 cr.)</b>	Continues instruction in basic reading techniques. Students use common reading materials and work at recognizing and reading basic sight words. Students also learn how to produce simple sentences and basic paragraphs using familiar materials while utilizing appropriate grammar and correct punctuation.
<b>75861833 ELL Reading and Writing 3 (5 cr.)</b>	Identifies main ideas and supporting details. Students analyze compound words, read experiential stories, and infer meaning. They compose short paragraphs in several rhetorical styles and basic workplace reports using simple grammatical structures.
<b>75861834 ELL Reading and Writing 4 (5 cr.)</b>	Develops fluency and introduces students to such materials as textbooks, job applications, magazines, and newspapers. The student employs a variety of comprehension strategies such as reading literally, reading critically to evaluate, comparing and contrasting, and inferring feelings and attitudes. Students also learn how to take notes effectively in class and they write extended or in-depth paragraphs in various genres. They also read and analyze essays.
<b>75861835 ELL Reading and Writing 5 (5 cr.)</b>	Demonstrates students' comprehension of a wide range of printed and electronic materials. Students use a variety of comprehension strategies and read literally, inferentially, and critically. They also skim and scan texts. Test-taking strategies and study skills are incorporated. Students also learn how to summarize, analyze, and synthesize information into the essay format using MLA or APA styles.
<b>75861836 ELL Reading and Writing 6 (5 cr.)</b>	Improves students' ability to read graphs, technical reports, literature, newspapers, magazines and instructional manuals, among other documents. Students read critically and inferentially and adjust their reading rate. Students also learn to write at a collegiate level utilizing various rhetorical styles. Research techniques and report writing prepare students for writing at the college level.

## Course Descriptions

- 75861837 ELL Workplace Strategies 1 (5 cr.)** Provides survival English for non-English speaking individuals who have entered the workforce. Emphasis is on vocabulary needed on the job. Employees are introduced to basic grammar and reading concepts.
- 75861838 ELL Workplace Strategies 2 (5 cr.)** Teaches oral language, reading and grammar, as well as numerical vocabulary and thinking in English. Emphasis is given to vocabulary, pronunciation, sentence structure, correctness of oral form, asking and answering questions, reading sign words, learning key decoding skills, and written work, both generic and related to the workplace. Participants learn the language necessary to do computation and word problems.
- 75861839 ELL Workplace Strategies 3 (5 cr.)** Expands English competencies in oral communication, reading, grammar and problem solving for those who have attained the basics. Participants will be presented with both employment language skills and those needed for continued education.
- 75861841 ELL Literacy Oral (2 cr.)** Provides students an opportunity to listen and speak English at the foundation level. Students will be introduced to vocabulary such as numbers, colors, food, clothing, household, school, and community through pictures. In addition, students will learn to identify, produce, and pronounce the English alphabet and basic foundation words. As a result, students will be prepared for ELL Level 1 courses in speaking, listening, reading and writing.
- 75861842 ELL Literacy Writing (2 cr.)** Provides students an opportunity to learn to write in English at the foundation level. Students will be introduced to vocabulary such as numbers, colors, food, clothing, household, school, and community through pictures. In addition, students will learn to write the English alphabet, their names, and basic foundation words. As a result, students will be prepared for ELL Level 1 courses in speaking, listening, reading and writing.
- 75861843 ELL Workplace Strategies 4 (5 cr.)** Focuses on advanced conversation and writing skills. Participants will learn culture-bound and idiomatic language, multiple definitions and contextual importance, and pronunciation subtleties. They will use both generic and work-based situations. Students will continue to expand their writing skills.
- 75861844 ELL Workplace Strategies 5 (5 cr.)** Expands advanced conversation and writing abilities. Participants will develop English skills, which incorporate the nuances of the language. Both generic and workplace situations are used.

## Course Descriptions

<b>75861845 ELL Workplace Strategies 6 (5 cr.)</b>	Expands advanced workplace reading, writing, and speaking skills. Participants will acquire workplace vocabulary and concepts that focus on job placement and promotion as well as FVTC program success.
<b>75861846 ELL Writing &amp; Grammar 1 (5 cr.)</b>	Provides additional practice in reading, writing, grammar, pronunciation and listening. Multimedia materials are used to enhance the learning of basic language vocabulary and structure.
<b>75861847 ELL Writing &amp; Grammar 2 (5 cr.)</b>	Provides additional practice of sentence structure using language patterns and rules of grammar. A variety of multimedia materials are available to enhance vocabulary, listening and pronunciation.
<b>75861848 ELL Writing &amp; Grammar 3 (5 cr.)</b>	Provides additional practice of vocabulary, pronunciation, grammar and listening for language acquisition in a multimedia environment.
<b>75861849 ELL Writing &amp; Grammar 4 (5 cr.)</b>	Provides additional practice of sentence structure using language patterns and rules of grammar. A variety of multimedia materials are available to enhance vocabulary.
<b>75861850 ELL Writing &amp; Grammar 5 (5 cr.)</b>	Provides additional practice of sentence structure using language patterns and rules of grammar. A variety of multimedia materials are available to enhance vocabulary.
<b>75861851 ELL Writing &amp; Grammar 6 (5 cr.)</b>	Provides additional practice of sentence structure using language patterns and rules of grammar. A variety of multimedia materials are available to enhance vocabulary.
<b>75861852 English for the Workplace (5 cr.)</b>	Designed for ELL students, the focus in this course is on language development and field-centered vocabulary necessary to understand workplace terminology and employment practices. Disciplines covered are: Agriculture, Landscaping, Construction, and Manufacturing. Focuses on job topics that improve listening, speaking, reading, writing, and computer skills necessary for job success.
<b>75861853 ELL Written Communication (5 cr.)</b>	Teaches the writing process from the English as a foreign language perspective, focuses on grammatical and stylistic aspects in prewriting, drafting and revising. In this noncredit course, students analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and content.
<b>75861882 ELL Grammar 6 (2 cr.)</b>	Introduces grammar concepts in a classroom setting. Students examine grammar according to the state competencies for grammar at level 6. Students will then use the correct grammar in various skill areas. Completion of ELL Grammar 5 (75-861-768) recommended.

## Course Descriptions

<b>75861886 ELL for Written Communication (2 cr.)</b>	Teaches the writing process from the English as a foreign language perspective, focuses on grammatical and stylistic aspects in prewriting, drafting and revising. In this noncredit course, students analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and content.
<b>75861896 ELL for Occupations (2 cr.)</b>	Designed for level 5 ELL students, the focus in this course is on career exploration and field-centered language necessary to understand occupation terminology and employment prospects. Disciplines covered are: Health Sciences, Information Technology, Business, and Manufacturing. Focuses on speaking, writing and computer skills.
<b>862 - Career Education</b>	
<b>74862730 AE 7 Habits of Highly Effective Students (5 cr.)</b>	Helps students succeed by discovering their personal mission, setting goals, prioritizing tasks and teaming with others. This motivating workshop designed specifically for college students is a life changing experience that will have a lasting impact extending to post college successes.
<b>74862731 AE Employment Readiness (5 cr.)</b>	Provides a firm base for participants to be successful at all components of a program or in an employment situation. The course will focus on skills needed to be a good student, employee, group member, and general citizen. The focus will be on employment essentials such as adapting to change, thinking critically and creatively, working collaboratively, communicating effectively, and acting responsibly.
<b>74862732 AE Individual Skills/Career Clusters (5 cr.)</b>	AE content support in reading, writing, math, and study skills for Integrated AE and program courses in targeted Career Clusters.
<b>74862733 AE Career &amp; Personal Development (5 cr.)</b>	Focuses on increasing self-awareness; development of basic life and interpersonal skills; and career exploration and planning. Topics include: personal assessments, career choice options, decision making, goal setting, and developing an action plan.
<b>74862741 AE 7 Habits of Highly Effective College Students (1 cr.)</b>	Helps students succeed by discovering their personal mission, setting goals, prioritizing tasks and teaming with others. This motivating workshop designed specifically for college students is a life changing experience that will have a lasting impact extending to post college successes.
<b>74862749 AE Individual Skills Support for Career Clusters (2 cr.)</b>	AE content support in reading, writing, math, and study skills for Integrated AE and program courses in targeted Career Clusters.

## Course Descriptions

- 74862750 AE Starting Point 2.0 (1 cr.)** Prepares young parents to take an active role in planning their careers by focusing on life/career development and planning. This course presents a developmental process designed to help young parents choose realistic career plans congruent with their values and capabilities. Resources from the college and the community are introduced for support in reaching their academic, employment, and healthy lifestyle goals.
- 74862755 AE EmpowHer (1 cr.)** Prepares young single woman to take an active role in planning their careers by focusing on life/career development skills. This course presents a developmental process designed to help participants choose realistic career plans congruent with their values and capabilities. Resources from the college and the community are introduced for support in reaching their academic, employment, and healthy lifestyle goals.
- 74862765 AE Employment Readiness (2 cr.)** Provides a firm base for participants to be successful at all components of a program or in an employment situation. The course will focus on skills needed to be a good students, employee, group member, and general citizen. The focus will be on employment essentials such as adapting to change, thinking critically and creatively, working collaboratively, communicating effectively, and acting responsibly.
- 74862790 AE Career & Personal Development (2 cr.)** Focuses on increasing self-awareness; development of basic life and interpersonal skills; and career exploration and planning. Topics include: personal assessments, career choice options, decision making, goal setting, and developing an action plan.
- 77862710 AE Career and College Transition (2 cr.)** Provides opportunity for students to examine life success strategies and explore careers utilizing internet and college resources. The career exploration coursework also combines field studies with college-readiness activities to prepare students for post-secondary curriculum.
- 77862720 AE Strategies for Successful Transition (1 cr.)** Provides opportunity for students to examine success strategies and explore opportunities utilizing internet and college resources. The success strategies combine On-Course curriculum with college connections to prepare students for post-secondary courses.

### **863 - Intensive English Program**

## Course Descriptions

- 10863103 English for College Success (1 cr.)** Acclimates students to the learning environment in U.S. American higher education. Explores cultural topics as they relate to classroom interactions. Equips students with practical tools to navigate course materials such as; syllabi, Blackboard, rubrics, assignments, grading and more. Introduces On Course strategies for creating greater academic, professional and personal success. New students, prior to registration email [IntensiveEnglish@fvtc.edu](mailto:IntensiveEnglish@fvtc.edu) for an assessment to determine your proficiency in English.
- 10863104 Pronunciation through Current Events (3 cr.)** Enhance your English pronunciation skills focused on current events! This course combines the latest news stories with targeted pronunciation exercises to help discuss complex topics clearly and confidently. Through interactive lessons, audio resources, and practical speaking activities, students will improve pronunciation while presenting and discussing global issues. Pronunciation elements that will be studied are phonetics, vowels, consonants, stress, rhythm, and intonation. New students, prior to registration email [IntensiveEnglish@fvtc.edu](mailto:IntensiveEnglish@fvtc.edu) for an assessment to determine your proficiency in English.
- 10863105 English American Language and Culture 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 email [IntensiveEnglish@fvtc.edu](mailto:IntensiveEnglish@fvtc.edu) for an assessment to determine your proficiency in English.
- 10863106 English American Language and Culture 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 email [IntensiveEnglish@fvtc.edu](mailto:IntensiveEnglish@fvtc.edu) for an assessment to determine your proficiency in English.

## Course Descriptions

<b>10863108 English Grammar Beginner (3 cr.)</b>	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 email <a href="mailto:IntensiveEnglish@fvtc.edu">IntensiveEnglish@fvtc.edu</a> for an assessment to determine your proficiency in English.
<b>10863109 English Grammar Intermediate (3 cr.)</b>	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 email <a href="mailto:IntensiveEnglish@fvtc.edu">IntensiveEnglish@fvtc.edu</a> for an assessment to determine your proficiency in English.
<b>10863111 English Language Immersion- 36 hrs (2 cr.)</b>	Focuses on developing the four main English skills - reading, writing, speaking, and listening through a communicative language methodology. Students expand their vocabulary, develop cultural understanding, and apply their language skills in an interactive cooperative learning environment. Explore fascinating interdisciplinary topics affecting global society today while improving English proficiency. New students, prior to registration please email <a href="mailto:IntensiveEnglish@fvtc.edu">IntensiveEnglish@fvtc.edu</a> for an English language assessment.
<b>10863112 English Grammar Advanced (3 cr.)</b>	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 email <a href="mailto:IntensiveEnglish@fvtc.edu">IntensiveEnglish@fvtc.edu</a> for an assessment to determine your proficiency in English.
<b>10863113 Exploring English through the Humanities (3 cr.)</b>	This course aims to enhance language proficiency while exploring the diverse field of the humanities. Students will develop their reading, writing, listening, and speaking skills through classroom instruction and immersive field trips. Topics include history, art, music, philosophy, literature, and creative writing. Activities include visits to museums, cultural centers, and historical sites, as well as discussions, group projects, presentations, and writing assignments connected to these experiences. New students, prior to registration email <a href="mailto:IntensiveEnglish@fvtc.edu">IntensiveEnglish@fvtc.edu</a> for an assessment to determine your proficiency in English.
<b>10863114 English Listening &amp; Speaking Beginner (3 cr.)</b>	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 email <a href="mailto:IntensiveEnglish@fvtc.edu">IntensiveEnglish@fvtc.edu</a> for an assessment to determine your proficiency in English.

## Course Descriptions

<b>10863116 English Listening &amp; Speaking Intermediate (3 cr.)</b>	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 email IntensiveEnglish@fvtc.edu for an assessment to determine your proficiency in English.
<b>10863118 English Listening &amp; Speaking Advanced (3 cr.)</b>	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 email IntensiveEnglish@fvtc.edu for an assessment to determine your proficiency in English.
<b>10863119 American English Pronunciation (3 cr.)</b>	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 email IntensiveEnglish@fvtc.edu for an assessment to determine your proficiency in English.
<b>10863124 English Reading Beginner (3 cr.)</b>	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 email IntensiveEnglish@fvtc.edu for an assessment to determine your proficiency in English.
<b>10863126 English Reading Intermediate (3 cr.)</b>	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 email IntensiveEnglish@fvtc.edu for an assessment to determine your proficiency in English.

## Course Descriptions

- 10863127 English Reading Advanced (3 cr.)** Provides comprehensive language training in advanced academic reading for English language learners to prepare for college-level technical programs focusing on variety of reading comprehension skills, critical thinking, and vocabulary development. New students, prior to registration email IntensiveEnglish@fvtc.edu for an assessment to determine your proficiency in English.
- 10863129 English Writing Beginner (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 email IntensiveEnglish@fvtc.edu for an assessment to determine your proficiency in English.
- 10863136 English Writing Intermediate (3 cr.)** Provides comprehensive language training focusing on further developing communication, writing skills and cultural awareness necessary for English language learners to prepare for college-level technical programs. Prepares students from an intermediate to advanced level of language proficiency. Writing and grammar as well as study skills will be emphasized. New students, prior to registration email IntensiveEnglish@fvtc.edu for an assessment to determine your proficiency in English.
- 10863137 English Writing Advanced (3 cr.)** For those who want to learn English as a foreign language students will develop the tools needed to write academic essays in many rhetorical styles such as comparing, contrasting, describing causes and effects, and analyzing and supporting arguments. Students will also develop and apply strategies for taking an essay exam. In addition, the course introduces how to incorporate paraphrases and quotations from other writers. Finally, students will complete a library research paper. New students, prior to registration email IntensiveEnglish@fvtc.edu for an assessment to determine your proficiency in English.
- 10863180 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 email IntensiveEnglish@fvtc.edu for an assessment to determine your proficiency in English.

## Course Descriptions

<b>10863181 English Language Learning Methods (3 cr.)</b>	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 email <a href="mailto:IntensiveEnglish@fvtc.edu">IntensiveEnglish@fvtc.edu</a> for an assessment to determine your proficiency in English. Coreq: English Learning Theories 10861180
<b>10863182 English Learning Practicum (3 cr.)</b>	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 email <a href="mailto:IntensiveEnglish@fvtc.edu">IntensiveEnglish@fvtc.edu</a> for an assessment to determine your proficiency in English. Coreq: English Learning Methods
<b>10863190 English Writing &amp; Grammar Beginner (3 cr.)</b>	Provides students comprehensive language training focusing on developing writing skills at the sentence level and introduces paragraph writing. Student will write longer pieces of writing containing several paragraphs. Introduces foundation-level grammar concepts. The course prepares students for intermediate language studies online or in American colleges and universities. New students, prior to registration contact <a href="mailto:IntensiveEnglish@fvtc.edu">IntensiveEnglish@fvtc.edu</a> for an assessment to determine your proficiency in English.
<b>10863191 English Writing and Grammar Intermediate (3 cr.)</b>	Provides students comprehensive language training focusing on developing writing skills at the paragraph level and introduces essay writing in different rhetorical styles. Students learn to analyze and use grammatical structures at the intermediate level. The course prepares students for advanced language studies online or in American colleges and universities. New students, prior to registration contact <a href="mailto:IntensiveEnglish@fvtc.edu">IntensiveEnglish@fvtc.edu</a> for an assessment to determine your proficiency in English.

## Course Descriptions

- 10863192 English Writing and Grammar Advanced (3 cr.)** Provides students comprehensive language training focusing on mastering the skills needed to write academic essays, exams, and reports in many rhetorical styles. The course offers a sophisticated analysis of the grammatical structures of English. The class prepares students for writing across the academic curriculum online or in American colleges and universities. New students, prior to registration contact [IntensiveEnglish@fvtc.edu](mailto:IntensiveEnglish@fvtc.edu) for an assessment to determine your proficiency in English.
- 890 - General Studies**
- 10890100 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.
- 10890103 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.
- 31890307 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.
- 31890308 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.
- 31890309 Personal Leadership (2 cr.)** Student will develop skills in personal planning; goal-setting, prioritizing, time management and self-advocacy.
- 74890710 AE Family Literacy Parenting (5 cr.)** Provides basic parenting skills in the areas of social skills, discipline, and academic preparation and support using research based parenting strategies. Parents develop and teach their children positive peer and social relationships.
- 74890729 AE FSS-Quick Start (1 cr.)** Provides information about high school credential completion options and career pathways to justice involved individuals.
- 74890730 AE FSS 1-Introduction (1 cr.)** Provides students an overview of high school completion options, college resources, and time management skills.
- 74890731 AE FSS 2-Technology (1 cr.)** Engages students in digital skills needed for completion of high school credentials and transitioning to college or career.

## Course Descriptions

<b>74890732 AE FSS 3-HS Completion Req Info &amp; Options (1 cr.)</b>	Allows students to discern high school completion options and career pathways; provides practice in test taking skills and computer literacy; introduces college vocabulary.
<b>74890733 AE FSS 4-Personal Education Plan (1 cr.)</b>	Development of course of action for high school completion, college transition, or career skills.
<b>74890740 AE First Steps to Success Individual (1 cr.)</b>	Provides entry into AE classes at FVTC. The student is assigned an AE advisor, considers educational plans, and register for appropriate AE classes. This course is the initial step for students needing remedial work for program entry, students preparing for GED/HSED, and students just wanting to update their skills.
<b>74890743 AE Family Literacy Orientation (1 cr.)</b>	Provides entry into AE classes at the Even Start Family Literacy site. The student is assigned an AE advisor, considers educational plans, parenting goals, family literacy policies and expectations and registers for appropriate AE classes. This course is the initial step for students needing remedial work for program entry, students preparing for GED/HSED, and students just wanting to update their skills.
<b>74890746 AE First Steps to Success (1 cr.)</b>	Provides an awareness of Adult Education programming at FVTC. Students will engage in on-line activities to prepare for future AE enrollment.
<b>74890753 AE Family Literacy Parenting (2 cr.)</b>	Provides basic parenting skills in the areas of social skills, discipline, and academic preparation and support using research based parenting strategies. Parents develop and teach their children positive peer and social relationships.