COURSE DESCRIPTIONS

AUT 111 Engine Overhaul (3)
Engine overhaul introduces the student to the concepts and skills necessary to diagnose and overhaul automotive engines. Areas covered in this class include introduction to specialty tools and their correct use, complete engine disassembly, inspection and measurement of internal components including heads, valve resurfacing, and proper fitting and reassembly of entire "long block". Class time is divided between classroom and lab.

AUT 130 Manual Transmission I (2)
Manual Drive Train & Axles I is a basic introduction to the manual transmission found in the automotive industry. The course includes an introduction to the theory behind manual transmissions, identification of the different types of transmission and their components, and an introduction to the specialized tools used in servicing transmissions, synchromesh transmissions, gear ratios found in different transmissions, an introduction to manual clutches and transfer cases, and drive shaft technology including CV joint and bearing replacement. Students will receive instruction that will assist them in taking the Automotive Service Excellence (ASE) exams after successfully completing the 1st and 2nd levels of the automotive technology program.

AUT 140 Suspension and Steering I (3)
Suspension & Steering I introduces automotive steering and suspension systems. The course includes hydraulic principles, bushing replacement, long and short arm diagnosis and replacement, parallelogram steering geometry diagnosis and repair, McPherson strut strip down and refit, and the effect of damping and rebound on the vehicle handling, spring design measuring, and replacement. Classroom time is divided between lecture, discussion, and individual learning activities.

AUT 145 Suspension and Steering II (3)
Steering & Suspension II is the advanced application of knowledge and hands-on skills learned in AUT140 (Steering & Suspension I). The course includes the use of alignment geometry and computerized alignment equipment to diagnose and repair steering suspension problems and to verify that a vehicle's suspension and steering components are within manufacturer's specifications. It also includes removing and replacing steering and suspension components according to manufacturer's specifications, inspecting, servicing, and repairing wheel and tire assemblies for optimum performance. Prerequisite: AUT140

AUT 150 Brakes I (3)
Brakes I is a basic introduction to automotive brake technology. The emphasis in this course is on diagnosing and maintaining brake systems. It covers identification of brake parts and how they function, the use and types of friction materials and heat dissipation, stripping and refitting disc and drum brakes, rotor diagnosing including measurement and cutting, identification of pad types, hydraulic principles and brake bleeding. The course is closely aligned with NATEF/ASE task list for A5 and will prepare the student to take the Automotive Service Excellence (ASE) exams. Classroom time is divided between lecture, discussion, and individual learning activities.

AUT 155 Brakes II (4)
Brakes II apply the knowledge and hands-on skills acquired in AUT150 (Brakes I). It includes testing troubleshooting, diagnosing, disassembling, and replacing both automotive drum and disc brake systems using manufacturer's specifications, four-wheel and rear wheel anti-lock braking system components, operations, and repairs will also be covered. Prerequisite: AUT150

AUT 161 Electrical I (3)
In this course students will complete service work orders; describe the relationship between voltage, ohms and amperage; perform basic electrical circuit repairs; identify electrical system faults; identify basic wiring diagram symbols, components, and legend information; perform basic electrical circuit measurements using a DVOM; describe basic circuit characteristics of series, parallel and series parallel circuits through a variety of classroom and shop learning assessment activities.

AUT 162 Electricity/Electronics I (2)
Electrical & Electronic Systems I builds on the skills developed in Electrical I. This course emphasizes battery design, starter systems, and the charging system and its components. In addition to these systems, hybrid technology will be explored. Class time is divided between the classroom and lab experiences. Classroom is primarily lecture, discussion, and group or individual learning activities that emphasize troubleshooting and problem-solving skill development.

AUT 165 Engine Mechanical Diagnosis (2)
Engine Mechanical Diagnosis involves diagnostic theory, process, and testing as well as practicing major component replacement. Students will split their time between the classroom and lab.

AUT 170 Heating - Air Conditioning I (2)
Heating & Air Conditioning I is an introductory course that is designed to provide the student with a solid foundation in automotive heating and air conditioning. Class time is divided between the classroom and lab experiences. Classroom time is spent primarily on lecture, discussion, and group or individual learning activities that provide a foundation to encourage troubleshooting skill development.

AUT 181 Engine Performance I (3)
In this learning plan students will complete work order and check history; identify engine mechanical integrity; explore the fundamentals of fuel system theory; identify fuel system concerns; explore the fundamentals of ignition theory; identify ignition system concerns; identify induction system concerns; identify exhaust system concerns; identify engine mechanical integrity through a variety of learning and assessment activities.

AUT 182 Engine Performance II (3)
Engine Performance II builds on the knowledge and skills developed in Engine Performance I. The course continues the study of theory and of power train diagnostics. Students will learn the rudiment of computerized engine controls, ignition systems, fuel, air induction, and exhaust and emission control systems. The course provides extensive hands-on training on the use of the latest diagnostic equipment and tools.

AUT 205 Auto Transmission/Transaxle I (2)
Automatic Transmission/Transaxle I is a basic introduction to automatic transmissions/transaxle systems. The course includes an introduction to hydraulic principles, an introduction to the different types of automatic transmission fluids, automotive measurement, and the identification to the parts of the automatic transmission including planetary gear sets, brake bands, bearings, pumps, boost systems, and valve bodies. It also contains some basic services performed on an automatic transmission including oil filter replacement, air testing of clutch packs, removing and refitting a transaxle and/or transmission. Students will receive instruction that will assist them in taking the Automotive Service Excellence (ASE) Exams after successfully completing the requirements of the 1st and 2nd levels of the automotive technology program.

AUT 215 Auto Transmission/Transaxle II (2)
Automatic Transmission & Transaxles II is the advanced application of knowledge and hands-on skills acquired in Automatic Trans & Transaxles I. The course includes testing, troubleshooting and diagnosing, disassembly, inspection, and assembly of automatic transmissions and transaxles according to manufacturer's specifications. Electronically controlled automatic transmission components and operation are covered along with diagnosing and repair. Students will receive instruction that will assist them in taking the Automotive Service Excellence (ASE) exams after successfully completing the requirements of the 1st and 2nd levels of the automotive technology program.

AUT 230 Manual Transmission II (2)
Manual Drive Train and Axles II contains the advanced application of knowledge and hands on skills acquired in Manual Drive Train & Axles I. Emphasis will be on testing, troubleshooting and diagnosing, disassembling, inspecting and assembling transmissions and trans axles according to manufacturer's specifications. Students will receive instruction that will assist them in taking the automotive excellence (ASE) exams after successfully completing the requirements of the 1st and 2nd levels of the automotive technology program.

AUT 260 Electricity/Electronics II (6)
Electricity/Electronic Systems II is an advanced level course and builds on the knowledge, skills and abilities mastered in Electricity/Electronic Systems I. This class involves the theory and application of automotive electronic circuits and accessories. It includes the construction and servicing of lighting systems, gauges, warning devices, windshield wipers, and solid state devices. The course provides the knowledge to prepare for the Automotive Service Excellence (ASE) Exams. The course is aligned closely with the NATEF/ASE task list for A6 Electrical/Electronic Systems.

AUT 270 Heating - Air Conditioning II (2)
Heating and Air Conditioning II is an advanced level course and builds on the knowledge, skills and abilities mastered in AUT170 Heating & Air Conditioning I. Climate control systems are explained in-depth including theory of refrigeration, servicing procedures, and diagnosis techniques. Compressor service and distribution systems are studied. Laboratory experience is given in testing and servicing a variety of systems and problems. The course provides the knowledge to prepare for the Automotive Service Excellence (ASE) exams. The course is aligned closely with the NATEF/ASE task list for A7 Heating & Air Conditioning.

AUT 281 Engine Performance III (5)
Engine Performance III is an advanced level course and builds on the knowledge, skills, and abilities mastered in Engine Performance I (AUT181) and Engine Performance II (AUT182). This class involves theory and application of automotive engine diagnostics including computerized engine controls, ignition systems, fuel, air induction and exhaust systems, emission control systems, and exhaust gas treatments. The course provides extensive hands-on training on the use of the latest diagnostic equipment and tools. The class provides the knowledge to prepare for the Automotive Service Excellence (ASE) exams. The course is closely aligned with the NATEF/ASE task list for A8 Engine Performance.

BAT 117 Intro to Acct & Acct Software (4)
This course develops a foundation for accounting skills and assists students attain an understanding of accounting concepts and the importance of accounting for funds in a business. Students get an introduction to the accounting equation, journal entries, t-accounts, Trial Balances, Financial Statements, adjusting entries, closing entries, and financial statement analysis. Students also use a comprehensive, hands-on training manual for QuickBooks Desktop to learn computer accounting practices through sample companies.

BAT 123 English & Business Communications (2)
This course includes the identification and use of the parts of speech (punctuation, capitalization, and numbers) in writing effective sentences and paragraphs. Basic spelling rules will be covered and implemented. Students will learn the basic letter parts, business tables, email procedures and etiquette, and resume and interviewing techniques.

BAT 130 Word Processing (4)
Students will use Microsoft Office Word software to create and edit basic-to-advanced documents, including tables and charts. This is an instructor-guided lab course.

BAT 172 Spreadsheet Management (4)
This course is designed to familiarize the student with various basic and advanced spreadsheet functions. These include creating and maintaining spreadsheets, displaying information, adding and changing formulas, applying formatting, creating charts and tables, inserting graphics, and customizing the appearance and functions of spreadsheets.

BAT 211 Human Relations & Ethics (2)
This course is designed for students to learn skills to compete in an increasingly competitive work environment. Skills stressed will include the production of documents and resources needed to obtain employment. Issues addressed will include appropriate communication, conflict resolution, teamwork, accountability and business ethics.

BAT 252 Payroll Accounting (4)
The course will cover all aspects of payroll accounting and provides an innovative, hands-on approach with unique blend of theory and practical exercises, enabling students to get a thorough understanding of the most widely used payroll accounting functions. This course ends with a comprehensive capstone project. Prerequisites: BAT117

BAT 265 Advanced Accounting Software (4)
This course is a comprehensive survey of QuickBooks Desktop that culminates with sitting for the QuickBooks Desktop certification exam. Prerequisites: BAT117

BDT 110 Basic Electrical for Carpenters (4)
This basic electrical course is designed specifically for carpenters, providing fundamental electrical knowledge essential for job site safety, rough-ins, and coordination with electricians. Using the NCCER Electrical Level 1 curriculum, students will gain a working understanding of electrical systems, tools, and best practices while applying hands-on skills in a controlled lab environment.

BDT 117 Carpentry I (4)
The intent of this course is to teach the students the history of the construction trade, building materials, different fasteners and adhesives, hand and power tools and reading plans and elevations. It also describes the apprentice program and career opportunities. The course will follow the NCCER modules for: Orientation to the Trade, Building Materials, Fasteners and Adhesives, Hand and Power Tools, and Reading Plans and Elevations.

BDT 119 Construction Basics (4)
The intent of this course is to teach the students the history of the construction trade, building materials, different fasteners and adhesives, hand and power tools and reading plans and elevations. It also describes the apprentice program and career opportunities. The course will follow the NCCER modules for: Orientation to the Trade, Building Materials, Fasteners and Adhesives, Hand and Power Tools, and Reading Plans and Elevations.

BDT 120 Carpentry I (4)
The Carpentry I course helps learners to build general carpentry skills through NCCER General Carpentry curriculum. The included NCCER General Carpentry modules prepare individuals for entry-level positions on project sites by providing instruction and hands-on training for an orientation to the carpentry trade, building materials and fasteners, construction plans & documents, and site and building layout. Students taking this course, combined with the Carpentry II course, will be prepared to take and pass the General Carpentry exam to earn the NCCER General Carpentry credential. All content from the NCCER General Carpentry 6th edition modules.

BDT 122 Floors, Walls & Ceiling Frames (4)
This course will cover lay out and erecting floor and wall and ceiling sections. The emphasis for this course is the understanding of precise layout of studs, sills, floor joist, and ceiling members. The student will learn how to layout partitions, door, and window openings. The student will perform the entire layout mentioned above, and know the correct symbols and names of all wall, floor, and ceiling components. The student will be introduced to the different methods used for framing buildings and floor framing with an emphasis on the platform, Balloon and post and beam framing method. The tools and materials used for this type of construction will be covered. The course will follow the NCCER modules for: Floor Systems, Wall and Ceiling Framing, and Introduction to Concrete, Reinforcing Materials and Forms.

BDT 127 Windows, Doors & Stairs (3)
This course will introduce the student to methods and procedures used in the selection and installation of residential windows, doors, and stairs. Students will learn the proper components of windows and doors along with basic stair layout. This course will follow the NCCER modules for Windows and Exterior doors and Basic Stair Layout.

BDT 132 Drywall (3)
The course introduces the student to the materials and techniques used in building and finishing residential and commercial buildings, including wood and steel framed structures. The course describes the various types of gypsum drywall, their uses, and the fastening devices and methods used to install them. The materials, tools and methods used to finish, and patch gypsum drywall are also covered.

BDT 136 NCCER Plumbing Level 1 Part 1 (4)
This course features a highly illustrated design, technical hints and tips from industry experts, review questions and a whole lot more! Key content includes: Introduction to the Plumbing Profession, Plumbing Safety, Tools of the Plumbing Trade, Introduction to Plumbing Math, Introduction to Plumbing Drawings, Plastic Pipe and Fittings, Copper Pipe and Fittings, Cast-Iron Pipe and Fittings.

BDT 137 Roof Framing (3)
Students will learn the different types of roofs used in residential and commercial construction. This course is the most demanding of the framing tasks. Unlike floor and wall construction that involve working with straight lines, roofs are sloped requiring the framer to understand and calculate precise angles. The student will learn the names of all the roof parts and how to calculate the angles to achieve a properly constructed roof. This course will follow the NCCER modules for roof framing.

BDT 138 NCCER Plumbing Level 1 Part 2 (4)
This course features a highly illustrated design, technical hints and tips from industry experts, review questions and a whole lot more! Key content includes: Introduction to the Cast-Iron Pipe and Fittings, Carbon Steel Pipe and Fittings, Introduction to Plumbing Fixtures, Introduction to Drain, Waste, and Vent (DWV) Systems, and Introduction to Water Distribution Systems.

BDT 142 Concrete (3)
This course introduces the student to the fundamentals of masonry/concrete work. The student will have the opportunity to gain practical knowledge of masonry as a trade, develop skills in the use of the tools, equipment, materials, and techniques used in construction.

BDT 156 NCCER Plumbing Level 2 Part 1 (4)
This course features a highly illustrated design, technical hints and tips from industry experts, review questions and a whole lot more! Key content includes: Plumbing Math Two, Reading Commercial Drawings, Structural Penetrations, Insulation, and Fire Stopping, Installing and Testing DWV Piping.

BDT 158 NCCER Plumbing Level 2 Part 2 (4)
This course features a highly illustrated design, technical hints and tips from industry experts, review questions and a whole lot more! Key content includes: Installing Roof, Floor, and Area Drains, Installing and Testing Water Supply Piping, Types of Valves, Installing Fixtures and Valves, Installing Water Heaters, Basic Electricity, and Fuel Gas and Fuel Oil Systems.

BDT 212 Carpentry II (5)
The Carpentry II course helps learners to build general carpentry skills through NCCER General Carpentry curriculum. The included NCCER General Carpentry modules prepare individuals for positions on project sites by providing instruction and hands-on training on the components and construction systems for floors, walls, roof framing, stairs, and building envelope. Students taking this course, combined with the Carpentry I course, will be prepared to take and pass the General Carpentry exam to earn the NCCER General Carpentry credential. All content from NCCER General Carpentry 6th edition modules.

BDT 217 Construction Electricity (3)
This course introduces the students to the electrical field. It also provides the student with an opportunity to understand the connection between the two construction fields. The student will be introduced to series, parallel, series-parallel circuits, hardware and systems used by electricians. It also provides a navigational road map for use of the National Electrical Code.

BDT 222 Plumbing (4)
The course will familiarize the student with the terminology and basic plumbing principles used in the plumbing profession. A variety of topics will be present such as safety, tools, drawings, fittings, fixtures, and faucets. This course will follow the NCCER modules for Plumbing Level One.

BDT 236 NCCER Plumbing Level 3 Part 1 (4)
This course features a highly illustrated design, technical hints and tips from industry experts, review questions and a whole lot more! Key content includes: Applied Math, Sizing Water Supply Piping, Potable Water Treatment, Backflow Preventers, Types of Venting.

BDT 238 NCCER Plumbing Level 3 Part 2 (4)
This course features a highly illustrated design, technical hints and tips from industry experts, review questions and a whole lot more! Key content includes: Sizing DWV and Storm Systems, Sewage Pumps and Sump Pumps, Corrosive-Resistant Waste Piping, and Compressed Air.

BDT 256 NCCER Plumbing Level 4 Part 1 (4)
This course features a highly illustrated design, technical hints and tips from industry experts, review questions and a whole lot more! Key content includes: Business Principles for Plumbers, Introductory Skills for the Crew Leader, Water Pressure Booster and Recirculation Systems, Indirect and Special Waste.

BDT 258 NCCER Plumbing Level 4 Part 2 (4)
This course features a highly illustrated design, technical hints and tips from industry experts, review questions and a whole lot more! Key content includes: Hydronic and Solar Heating Systems, Codes, Servicing Piping Systems - Fixtures and Appliances, Private Water Supply Well Systems, Private Waste Disposal Systems, Swimming Pools and Hot Tubs, and Plumbing for Mobile Homes and Travel Trailers.

BDT 270 Construction OJT (6)
This course features a is a hands-on method of teaching the skills, knowledge, and competencies needed for employees to perform in the field of construction work. Students learn in an environment where they will need to practice the knowledge and skills obtained during their training.

BDT 280 Building Tech OJT (4)
This course features a is a hands-on method of teaching the skills, knowledge, and competencies needed for employees to perform in the field of building technology work. Students learn in an environment where they will need to practice the knowledge and skills obtained during their training.

BDT 290 Carpentry OJT (6)
This course features a is a hands-on method of teaching the skills, knowledge, and competencies needed for employees to perform in the field of carpentry. Students learn in an environment where they will need to practice the knowledge and skills obtained during their training.

CBM 115 Design, Layout & Safety (6)
Introduces the fundamentals of residential and commercial cabinet construction. Topics include Intro to cabinetmaking, Health and Safety, Career Opportunities, Industry, Cabinetry Styles, Components of Design, Design Decisions, Human Factors, Production decisions, Sketches, Mock-ups and Working Drawings, Measuring, Marking and Laying out materials.

CBM 130 Workplace Skills I (1)
This course utilizes Key Train Software to assist in advancement of knowledge in Applied Math, Reading for Information, and Locating Information Work Keys assessments that are required prior to exiting the program. Students will also be required to attend seminars provided through the Career Resource Center. Seminar topics include interview techniques, developing and preparing a resume, completing job applications, ethics, and teamwork.

CBM 135 Print Reading (1)
Print Reading describes how to read and interpret sets of commercial drawings and specifications. Print Reading describes how to derive cabinetmaking plans from architectural drawings and specifications. This course uses NCCER Craft Module 27201-13 and all students take a certification exam.

CBM 145 Cabinetry Materials & Products (6)
Topics include Wood Characteristics, Lumber and Millwork, Cabinet and Furniture Woods, Manufactured Panel Products, Veneers and Plastic Overlays, Adhesives, Gluing and Clamping, Bending and laminating, Overlaying and Inlaying Veneer, Installing Plastic Laminates, Glass and Plastic Products, Hardware, Fasteners and Ordering Materials and Supplies.

CBM 150 Millwork (5)
This course will utilize NCCER curriculum modules: 27208-13 and 27210-13 to cover the installation of metal doors and related hardware in steel-framed, wood framed, and masonry walls, along with their related hardware, such as locksets and door closers. It also covers the installation of wooden doors, folding doors and pocket doors. Students will learn to recognize different types of trim used in finish work. It focuses on the proper methods for selecting, cutting, and fastening trim to provide a professional finished appearance. Students will be tested for possible certification.

CBM 205 Machining Processes (6)
Machining Processes topics include Sawing with Hand and Portable Power Tools, Sawing with Stationary Machines, Surfacing with Hand and Portable Power Tools, Surfacing with Stationary Machines, Shaping, Drilling and Boring, Computer Numerically Controlled Machinery, Abrasives, Using Abrasives and Sanding Machines, Turning, Joinery, Accessories, Jigs, Special Machines, and Sharpening.

CBM 215 Finishing Techniques (6)
This course introduces the learner to the operation of traditional finishing equipment. Students perform numerous exercises to gain familiarity with finishing tools and industrial finishing equipment while building their skills and familiarity with different finishes. Finishing Units include Finishing Decisions, Preparing Surfaces for Finish, Finishing Tools and Equipment, Stains, Fillers, Sealers, and Decorative Finishes, and Top coatings.

CBM 235 Methods of Construction (6)
Topics include Case Construction, Frame and Panel Components, Cabinet Supports, Doors, Drawers, Cabinet Tops and Tabletops, Kitchen Cabinets, Built-in Cabinetry and Paneling and Furniture.

CBM 237 Crew Leadership (1)
Using NCCER module 46101-11 the student will be introduced to the principles of leadership. Students will learn about the construction industry today, business organization, team building, gender and minority issues, communication, motivation, problem solving, decision making, safety, and project control. Students will be tested for possible certification.

CBM 245 Cabinet Installation (5)
This course will introduce students to the procedures for building and installing various types of residential and commercial cabinetry. Using NCCER module 27211-13 students will receive instruction for the selection and installation of base, wall cabinets and counter-tops and test for possible certification.Using NCCER module 27501-07 students will be introduced to the materials, tools and methods used in cabinetmaking. Practice projects are included to help trainees learn the various joining techniques used by cabinetmakers, while providing practice on stationary power tools. Students will build a cabinet from a set of plans and will be tested for possible certification.

CEC 105 Workplace Skills (1)
Upon successful completion of this course, the student should be able to identify the job skills necessary to have a successful career in the field of their choice. Topics included listening skills, oral communication, human relations, decision making/problem solving, how to work as a team, time and resource management, work ethics, career planning and resume building.

CEC 110 Safety Orientation/OSHA 10 (1)
Safety Orientation/OSHA 10 provides the student with an overview of the OSHA standards relevant to the construction industry. Various topics are presented in a 15-hour format. Among the subjects covered in the course are: an introduction to OSHA, electrical safety, fall protection, and excavation and trenching safety.

CEC 111 Introduction to HVACR (3)
In this course, students will receive an overview of the HVAC industry, learning about different career pathways, as well as hand tools, power tools and general construction safety.

CEC 115 Electrical Fundamentals (4)
The student will receive instruction in basic electrical theory for DC and Alternating Current systems. The student will have knowledge on the production of electricity and how to apply Ohm's Law and Power Formula. Electrical safety is taught along with skills in how to read and interpret schematic diagrams. This class must be passed with a minimum of a C or 78% for the student to continue to next course.

CEC 116 Electrical Fundamentals II (1)
Students will be introduced to motor theory and explore motor applications. This course builds on previous knowledge gained in Electrical Fundamentals I and requires a firm understanding of magnetism and voltage production. Motor trouble shooting will be introduced. Types of motors covered will be single phase motors, three phase and ECM motors. This class must be passed with a minimum of a C or 78% for the student to continue to next course.

CEC 118 Electrical Fundamentals II (2)
Students will be introduced to motor theory and explore motor applications. This course builds on previous knowledge gained in Electrical Fundamentals I and requires a firm understanding of magnetism and voltage production. Motor trouble shooting will be introduced. Types of motors covered will be single phase motors, three phase and ECM motors. This class must be passed with a minimum of a C or 78% for the student to continue to next course.

CEC 120 Heating System Fundamentals (4)
This course will give students a firm understanding of combustion and how it is applied in the HVAC trade. Residential gas furnaces will be studies in detail in order to gain understanding in how they are installed and serviced. A thorough understanding of Standard, Midrange and High Efficiency furnace service and installation will be earned as a result of this course. This class must be passed with a minimum of a C or 78% for the student to continue to next course.

CEC 121 Heating System Fundamentals II (2)
The heating System Fundamentals II course is designed to walk student thorough the requirements of the Uniform Mechanical Code in relation to Gas Piping and exhaust ventilation. Student will gain a thorough understanding and be able to apply skills in sizing vents and pipe upon completion of this course.

CEC 123 Adv Electrical Theory for HVAC (3)
Advanced Electrical Theory for HVAC is a continuation of Electrical Fundamentals and places an emphasis on developing systematic diagnosis and troubleshooting methods and procedures that will enable the student to become a highly-skilled, professional HVAC-R service technician.

CEC 125 Adv Electrical Theory for HVAC (2)
Advanced Electrical Theory for HVAC is a continuation of Electrical Fundamentals and places an emphasis on developing systematic diagnosis and troubleshooting methods and procedures that will enable the student to become a highly-skilled, professional HVAC-R service technician.

CEC 126 Advanced Heating Systems (3)
This course will introduce students to electric furnaces and hydronic heating with an emphasis on the electrical systems of those units and code requirements for the safe installation of such equipment. Indoor air quality will be discussed in detail as a major factor in human comfort.

CEC 135 Sheet Metal Fabrication I (3)
This course focuses on sheet metal fabrication utilizing various sheet metal tools and techniques. Duct sizing is discussed in addition to code requirements for duct systems.

CEC 202 Environmental HVAC Systems (4)
Environmental HVAC Systems introduces students to the heat transfer systems used in commercial applications to maintain comfort in a space. Students will gain an understanding of heat transfer, system design, commercial equipment and their operations. This course prepares students to enter into commercial work and exposes them to old and new designs they will encounter in the field while helping them understand the practices for energy efficiency in these systems.

CEC 205 HVAC Fundamentals (5)
This course is designed to introduce students to the broader picture that is HVAC. Students will become familiar with trade related organizations, job requirements, gain skills in soldering and brazing, and demonstrate learned skills to service and repair air conditioning systems. Students must earn a C grade or better in this course in order to advance to the next course.

CEC 207 Heating System Installation (3)
The heating System Fundamentals II course is designed to walk student thorough the requirements of the Uniform Mechanical Code in relation to Gas Piping and exhaust ventilation. Student will gain a thorough understanding and be able to apply skills in sizing vents and pipe upon completion of this course.

CEC 210 EPA 608 (1)
Students will be certified in federal regulations of safe refrigerant handling practices. Successful completion of the certification course is required for technicians to work with and purchase refrigerants.

CEC 212 HVAC Installation (3)
Students will learn installation practices according to manufacturers' recommendations and local code, including installing residential split systems, learning about heat pumps, indoor air quality (IAQ), and proper air flow. Prerequisites: Intro to HVACR, Electrical Fundamentals, Heating System Fundamentals, HVAC Fundamentals, EPA 608.

CEC 214 HVAC Services & Diagnostics (3)
Students will learn the different types of compressors used in cooling equipment, proper preventative maintenance practices, and how to diagnose refrigeration, combustion, and electrical faults commonly found in HVAC equipment. Prerequisites: Intro to HVACR, Electrical Fundamentals, Heating System Fundamentals, HVAC Fundamentals, EPA 608, HVAC Installation

CEC 215 Intro Mechanical Refrigeration (6)
The students will apply knowledge previously learned in HVAC Fundamentals to ice machines, refrigerators and commercial coolers. Students will learn the function of the specialized electrical circuits and how to service and repair these systems.

CEC 225 Heat Pumps & VRF (6)
In this course, students will learn about Heat Pumps and Variable Refrigerant flow (VRF) systems. They will gain an understanding of how these systems function, proper installation considerations, how to maintain and troubleshoot heat pump and VRF systems.

CEC 230 Commercial HVAC Level I (6)
This course will introduce students to the commercial applications of various HVAC systems. A strong foundation in refrigeration theory is required as well as a comprehensive understanding of system airflow and electrical fundamentals. Students who complete this course will be skilled in reading advanced electrical schematics and be able to describe the function and application of various commercial systems and components including Direct Digital Control systems and frequency drives.

CEC 235 Commercial HVAC II (6)
This course continues the introduction to Commercial HVAC systems. Students will perform basic maintenance, repairs and troubleshooting on functioning light commercial and commercial equipment. Students will also have the opportunity to participate in on-the-job training (OJT).

CHC 105 Introductory Craft Skills (3)
This course introduces the student to basic safety, construction math, hand and power tools of the trade, basic blueprint reading, communication skills, and basic employability skills. Math and reading will be embedded in the curriculum. Introductory Craft Skills is required for all students entering the Carpentry program. The intent of this course is to introduce the students to the construction trades. It is very important for every student to learn the proper way to conduct themselves while in the shop or on-the-job site. This course will cover shop and job site safety, tool safety, personal protective devices, protective railings, proper storage and handling of construction materials, and construction drawings. This course will follow the NCCER modules for: Basic Safety, Introduction to Construction Math, Introduction to Hand Tools, Introduction to Power Tools, Introduction to Blueprints, Basic Rigging, Basic Communication Skills, and Basic Employability Skills.

CHC 107 Carpentry Basics (2)
This course continues instruction utilizing the NCCER Core Curriculum. Topics include construction drawings, basic rigging, communication and employability skills, and materials handling. Successful completion of CHC 105 and CHC 107 will earn students NCCER Core credential.

CHC 110 Field Safety & Orientation (2)
Through a variety of classroom and/or lab activities the student will explore and demonstrate hazard recognition, signs, signals, barricades, work permits, material handling, specialty work, and health issues related to thE industry. In addition, work zone safety, electric and high voltage issues, fall protection, ladders and scaffolding, lock-out/tag-out, safety inspections and meetings, and how to properly investigate and document an accident are discussed and implemented. Math and reading will be embedded in the curriculum.

CHC 120 Site Layout I (1)
This course introduces the student to site layout and how it applies to commercial sites for building pads and site work. Introduction to the equipment used for site layout of these projects, and common math equations encountered will be addressed. Math and reading are embedded in the curriculum.

CHC 122 Site Layout II (4)
The course will include surveying math, metric system, and conversion between English and metric. Concepts in working with formulas and equations will be an essential component of the course. Students will learn proper use and care for site layout equipment. An introduction to reading of blueprints and specifications are relevant to site layout of various projects. Math and reading are embedded in the curriculum.

CHC 130 Safety Certifications (2)
This course instructs and prepares the student for a certificate in trench safety and competent person training, confined space safety certificate; and the OSHA 30-hour safety certificate. Industry has a high priority and focus on these safety certifications. Math and reading are embedded in the curriculum.

CHC 140 Heavy Highway I (6)
In this course the student will be introduced to the heavy highway trade of trucks and heavy equipment. Course content includes procedures and components of trucks, heavy equipment, below grade construction, earthmoving, plant operations, paving, and structures. Math and reading are embedded in the curriculum.

CHC 150 Heavy Equipment I (5)
This course will prepare the student with technical skills to seek employment as a heavy equipment operator in the equipment operations career field. This course includes instructions and practical operation experience in bulldozers, backhoes, track excavators, skid loaders, motor graders, and dump trucks. Students will also have a working understanding of grade reading, laser level operation, engineering stake interpretations, safety procedures, and equipment maintenance. Math and reading will be embedded within the curriculum.

CHC 180 Pipe Laying I (6)
Through classroom and/or lab experiences, instruction will include proper use of hand and power tools in the pipe laying trade, receiving and inspecting pipe upon arrival on the job site, cutting and fabricating the pipe, discussion of concrete, PVC, and ductile iron pipe, proper elevations, foundations and stabilization, bedding and de-watering practices will be discussed. Math and reading will be embedded in the curriculum.

CHC 195 Class A CDL (1)
This course will provide technical knowledge and skills for the student about various trucks in the 54,000 lb. tag weight and used in construction. Dump trucks will be the primary focus and the student will learn the components of the trucks as well as be instructed on safe operation of the vehicle. Math and reading will be embedded in the program. Pre-and post-trip inspections will be taught along with proper paperwork required in such vehicle. Optional: the student may complete the assessment to obtain the Class A CDL.

CHC 250 Heavy Equipment II (7)
This course will focus on the student's choice of heavy equipment. Application of all heavy equipment safety aspects is required. The training will take the student into more extensive operating procedures and will be tailored to an intermediate experience level. The course plan is progressive as the instructor introduces general maneuvers and the student advances their skill towards skills of greater difficulty and complexity. Students will be encouraged to attempt, practice, and perform simulations to demonstrate their skilled achievements. Math and reading will be embedded within the program.

CHC 255 Heavy Equipment II Application (6)
This laboratory/application course will focus on advancing the skills of the student on heavy equipment. Technical knowledge learned in CHC250 will be applied in this course. With practice, it is the intent that applied skills will improve on various pieces of equipment. Equipment used will consist of bulldozers, backhoes, loaders, track hoes, uni-loaders, and off road trucks. As the student completes each task he/she will move to a more challenging task. The instructor will monitor each task and improvement of student. Tasks are pass or fail. Math and reading will be incorporated in each task as it applies in the field.

CLR 121 Non-Structural A&D Repair 1 (4)
Through a variety of classroom and/or shop/lab learning and assessment activities, students in this course will explore the components of safety pertaining to auto collision and repair, explore the parts and construction of vehicles, explore opportunities in the auto collision industry, identify metal straightening techniques, identify the application and use of body fillers, demonstrate proper use, set-up and storage of welding equipment, distinguish between weld able and non-weld able materials, demonstrate fundamental industry standard recommended welds, identify plastics and adhesives used in automotive industry, explain the general purpose of damage, estimation and repair orders; explore the processes required for outer body panel repairs, replacements and adjustments, and demonstrate fundamental cutting procedures.

CLR 126 Non-Structural A&D Repair 2 (4)
Through a variety of classroom and/or lab/shop learning and assessment activities, students in this course will identify trim and hardware to be protected, examine what to consider when working with movable glass, perform outer body panel repairs, perform outer body replacements and adjustments; perform metal straightening techniques, perform body filling techniques, perform metal finishing techniques, use welding procedures in non-structural damage repair, distinguish between mechanical and electrical components, apply safety standards for the collision repair industry, use cutting procedures in non-structural damage repair, and determine procedures necessary for working with plastics and adhesives.

CLR 131 Structural A&D Repair 1 (2)
Through a variety of classroom and/or lab/shop learning and assessment activities, students in this course will identify measuring procedures, analyze the basic structural damage conditions, identify the safety requirements pertaining to structural damage repair, analyze frame repair methods, analyze unibody inspection and measurement, and identify procedures of welding for structural repair.

CLR 132 Structural A&D Repair 2 (2)
Through a variety of classroom and/or lab/shop learning and assessment activities, students in this course will apply safety requirements pertaining to structural damage repair, analyze frame inspection and repair procedures, determine direct and indirect damage for structural repair, analyze unibody inspection, measurement, and repair procedures, perform welding techniques for structural repair, and identify cutting procedures for structural repair.

CLR 141 Paint & Refinishing 1 (3)
Through a variety of classroom and/or lab/shop learning and assessment activities, students in this course will identify safety and personal health hazards according to OSHA guidelines and the "Right to Know" law, determine the different types of substrates and sanding materials relevant to auto body surface preparation, identify the process to clean and prepare a substrate for paint; distinguish between the properties, uses, and manufacturer specifications of metal treatments and primers, distinguish among the various types of spray guns and equipment; explore various paint codes and specifications for use, identify the various paint systems, explore the types of paint defects, distinguish between damage and non-damage related corrosion, and identify final detail procedures.

CLR 142 Paint & Refinishing 2 (3)
Through a variety of classroom and/or lab/shop learning and assessment activities, students in this course will select proper personal protective equipment, perform proper shop operations according to OSHA guidelines, remove paint coatings, apply corrosion resistant coatings, demonstrate proper spray gun operation and cleaning procedures, select proper painting and substrate materials for projects, analyze paint defects, causes and cures, repair paint defects, measure paint mil thickness, and determine final detail procedures for given projects.

CLR 151 Mechanical & Electrical (3)
Through classroom and/or lab/shop learning and assessment activities, students will determine how to diagnose steering and suspension, diagnose electrical concerns, complete head lamp and fog/driving lamp assemblies and repairs, demonstrate self-grounding procedures for handling electronic components, determine diagnosis, inspection, and service needs for brake system hydraulic components, examine components of heating and air conditioning systems, determine the inspection, service, and repair needs for collision damaged cooling system components, distinguish between the under car components and systems, and determine the diagnosis, inspection, and service requirements of active and passive restraint systems.

CLR 152 Intro to Est & Diagnostic Scan (2)
Through a variety of classroom and/or shop/lab learning and assessment activities, students in this course will: explore the components of analyzing damage pertaining to auto collision and repair; demonstrate basic estimating to identify structural repairs required, part design, construction materials, and manufacturing processes.

CLR 162 Workplace Skills (1)
This course utilizes KeyTrain Software to assist in reinforcing applied math and reading skills in preparation for the WorkKeys assessment, given prior to exiting the program. Students are encouraged to take the Locating Information WorkKeys exam as well, the third test needed to be eligible to earn a WorkReady Certificate. Students may also be required to attend seminars presented on campus dealing with topics such as interview techniques, developing and preparing a resume, completing job applications, ethics, and teamwork.

CLR 221 Non-Structural A&D Repair 3 (4)
Through a variety of classroom and/or lab/shop learning and assessment activities, students in this course will remove and install trim and hardware, determine process and procedures necessary for movable glass repair, repair outer body panel, replace and adjust outer body panels, remove and install mechanical and electrical components, demonstrate safety protocol appropriate for the auto repair setting, perform intermediate welding skills on non-structural damage repairs, and perform plastic and adhesive repairs.

CLR 226 Non-Structural A&D Repair 4 (5)
Through a variety of classroom and lab/shop learning and assessment activities, students in this course will apply safety requirements pertaining to structural damage repair, perform advanced welding and cutting techniques for structural repair, perform inspection and measurement of unibody for structural repair, repair unibody direct and indirect damage, perform frame inspection and measurement procedures, repair frame to industry standards, and remove and install fixed glass.

CLR 241 Adv. Estimating & Blueprinting (2)
Through a variety of classroom and/or shop/lab learning and assessment activities, students in this course will expand their knowledge and performance to explore the advanced components of analyzing damage pertaining to auto collision and repair; demonstrate a complete estimate to identify structural repairs required, part design, construction materials, and manufacturing processes. Prerequisite: CLR152: Intro to Estimating and Diagnostic Scanning.

CLR 242 Advanced Cutting & Welding (2)
In this course, students will analyze and prepare the vehicle for appropriate cutting and welding procedures, identify the appropriate safety concerns; determine and use the appropriate tools and materials to perform the cutting and welding procedures, and inspect the final product for quality.

CLR 246 Paint & Refinishing 3 (3)
Through a variety of learning and/or lab/shop learning and assessment activities, students in this course will identify safety and personal health hazards according to OSHA guidelines and the "Right to Know" law, determine the different types of substrates and sanding materials relevant to auto body surface preparation, identify the process to clean and prepare a substrate for paint, distinguish between the properties, uses and manufacturer specifications of metal treatments and primers, distinguish among the various types of spray guns and equipment, explore various paint codes and specifications for use, identify the various paint systems, explore the types of paint defects, distinguish between damage and non-damage related corrosion, and identify final detail procedures.

CLR 248 Paint & Refinishing 4 (4)
Through a variety of classroom and/or lab/shop learning and assessment activities, students in this course will apply exemplary safety procedures in all areas of auto body painting and refinishing, perform proper cleaning procedures for a refinish, prepare adjacent panels for blending, prepare plastic panels for refinishing, protect all non-finished areas of vehicle, operate high and low volume/pressure spray gun operations for painting and refinishing, perform all paint system applications on an automobile, apply appropriate paint color matching and mixing procedures, tint color using formula to achieve a blendable match, explore the causes, effects and correction of buffing related imperfections, explore the causes, effects and correction of pigment flotation, measure mil thickness, apply decals, transfers, tape, wood grain, and pinstripe to an automobile, apply buffing and polishing techniques to remove defects, apply cleaning techniques to automobile interior, exterior, glass and body openings, and remove over spray.

CLR 253 Mechanical & Electrical 2 (3)
Through classroom and/or lab/shop learning and assessment activities, students will advance knowledge and skills to determine how to diagnose steering and suspension, diagnose electrical concerns, complete head lamp and fog/driving lamp assemblies and repairs, demonstrate self-grounding procedures for handling electronic components, determine diagnosis, inspection and service needs for brake system hydraulic components, examine components of heating and air conditioning systems, determine the inspection, service and repair needs for collision damaged cooling system components, distinguish between the under car components and systems, and determine the diagnosis, inspection and service requirements of active and passive restraint systems. Pre-requisite: CLR151 Mechanical & Electrical.

CLR 256 Pulse Technology Welding (2)
In this course, students will identify different methods of attaching structural components (squeeze type resistance spot welding (STRSW), riveting, structural adhesive, MIG bronze, etc)

CLR 262 Plastic Repair Technology (2)
In this course, students will learn about and perform procedures for various types of plastic repair.

CLT 101 Supply Chain Logistics (4)
This course covers a range of industrial safety and material handling topics, including forklift operation, load distribution, and handling different types of materials. Participants will also learn about safety procedures and regulations related to electrical safety, welding safety, and fire safety, and how to effectively utilize safety data sheets. The course is designed to provide participants with the knowledge and competencies to identify and mitigate potential hazards in industrial settings, demonstrate proper safety procedures, and implement material handling practices that improve efficiency, safety, and compliance.

CLT 102 Certified Logistics Technician (3)
This course prepares students for work activities and related skills involved with moving material throughout the supply chain: to and from production sites, to warehouses and distribution centers, to material handlers within the various transportation modes (truck, air, rail, water).

CLT 104 Certified Logistics Technician (4)
This course will provide students with the training, knowledge and skills that mid-level material-handling workers in supply chain logistics will need. Students who successfully complete the course will be eligible to take the assessment to become a certified logistics technician.

CLT 250 Forklift Operation (1)
This course is designed to train entry level workers in the correct use of a forklift to unload, move, stack, and load materials for shipping and distribution.

COS 130 Cosmetology Clinical (1-12)
Cosmetology students who still have contact hours to complete, due to lack of attendance. This is usually after the original contact/credit semesters have ended.

COS 131 Scientific Concepts (1)
This course provides classroom instruction in sanitation, hair and scalp, skin, and nails for as prescribed by the Kansas Board of Cosmetology.

COS 132 Scientific Concepts (2)
This course provides classroom instruction in sanitation, hair and scalp, skin, and nails for as prescribed by the Kansas Board of Cosmetology.

COS 133 Scientific Concepts (3)
This course provides classroom instruction in sanitation, hair and scalp, skin, and nails for as prescribed by the Kansas Board of Cosmetology.

COS 134 Scientific Concepts (4)
This course provides classroom instruction in sanitation, hair and scalp, skin, and nails for as prescribed by the Kansas Board of Cosmetology.

COS 135 Scientific Concepts (5)
This course provides classroom instruction in sanitation, hair and scalp, skin, and nails for as prescribed by the Kansas Board of Cosmetology.

COS 141 Physical Services (1)
This course provides both classroom and clinical instruction in shampoos and rinses, scalp and hair care, facials and make-up, manicuring, pedicures and artificial nail enhancements.

COS 142 Physical Services (2)
This course provides both classroom and clinical instruction in shampoos and rinses, scalp and hair care, facials and make-up, manicuring, pedicures and artificial nail enhancements.

COS 143 Physical Services (3)
This course provides both classroom and clinical instruction in shampoos and rinses, scalp and hair care, facials and make-up, manicuring, pedicures and artificial nail enhancements.

COS 144 Physical Services (4)
This course provides both classroom and clinical instruction in shampoos and rinses, scalp and hair care, facials and make-up, manicuring, pedicures and artificial nail enhancements.

COS 145 Physical Services (5)
This course provides both classroom and clinical instruction in shampoos and rinses, scalp and hair care, facials and make-up, manicuring, pedicures and artificial nail enhancements.

COS 146 Physical Services (6)
This course provides both classroom and clinical instruction in shampoos and rinses, scalp and hair care, facials and make-up, manicuring, pedicures and artificial nail enhancements.

COS 147 Physical Services (7)
This course provides both classroom and clinical instruction in shampoos and rinses, scalp and hair care, facials and make-up, manicuring, pedicures and artificial nail enhancements.

COS 151 Design Services (1)
This course provides both classroom and clinical instruction in basic hair shaping, hair styling, and thermal techniques.

COS 152 Design Services (2)
This course provides both classroom and clinical instruction in basic hair shaping, hair styling, and thermal techniques.

COS 153 Design Services (3)
This course provides both classroom and clinical instruction in basic hair shaping, hair styling, and thermal techniques.

COS 154 Design Services (4)
This course provides both classroom and clinical instruction in basic hair shaping, hair styling, and thermal techniques.

COS 155 Design Services (5)
This course provides both classroom and clinical instruction in basic hair shaping, hair styling, and thermal techniques.

COS 156 Design Services (6)
This course provides both classroom and clinical instruction in basic hair shaping, hair styling, and thermal techniques.

COS 157 Design Services (7)
This course provides both classroom and clinical instruction in basic hair shaping, hair styling, and thermal techniques.

COS 161 Chemical Services (1)
This course provides classroom instruction in Chemical Hair care services. Virgin application, retouch application, foiling techniques, free hand techniques, permanent waving, and chemicals services that are for textured hair, relaxing,and curl reformation.

COS 162 Chemical Services (2)
This course provides classroom instruction in Chemical Hair care services. Virgin application, retouch application, foiling techniques, free hand techniques, permanent waving, and chemicals services that are for textured hair, relaxing,and curl reformation.

COS 163 Chemical Services (3)
This course provides classroom instruction in Chemical Hair care services. Virgin application, retouch application, foiling techniques, free hand techniques, permanent waving, and chemicals services that are for textured hair, relaxing,and curl reformation.

COS 164 Chemical Services (4)
This course provides classroom instruction in Chemical Hair care services. Virgin application, retouch application, foiling techniques, free hand techniques, permanent waving, and chemicals services that are for textured hair, relaxing,and curl reformation.

COS 165 Chemical Services (5)
This course provides classroom instruction in Chemical Hair care services. Virgin application, retouch application, foiling techniques, free hand techniques, permanent waving, and chemicals services that are for textured hair, relaxing,and curl reformation.

COS 166 Chemical Services (6)
This course provides classroom instruction in Chemical Hair care services. Virgin application, retouch application, foiling techniques, free hand techniques, permanent waving, and chemicals services that are for textured hair, relaxing,and curl reformation.

COS 167 Chemical Services (7)
This course provides classroom instruction in Chemical Hair care services. Virgin application, retouch application, foiling techniques, free hand techniques, permanent waving, and chemicals services that are for textured hair, relaxing,and curl reformation.

COS 221 Bus Prctice/Std Specific Needs (1)
This course provides classroom instruction in management practices, salon development, insurance, client records and salesmanship.

COS 222 Bus Prctice/Std Specific Needs (2)
This course provides classroom instruction in management practices, salon development, insurance, client records and salesmanship.

COS 223 Bus Prctice/Std Specific Needs (3)
This course provides classroom instruction in management practices, salon development, insurance, client records and salesmanship.

COS 224 Bus Prctice/Std Specific Needs (4)
This course provides classroom instruction in management practices, salon development, insurance, client records and salesmanship.

COS 231 State Law (1)
This course provides classroom instruction in the Kansas Board of Cosmetology General Laws, Rules and Regulations.

COS 232 State Law (2)
This course provides classroom instruction in the Kansas Board of Cosmetology General Laws, Rules and Regulations.

CPT 101 Safety in Manufacturing Produc (3)
It is important to be safe while you work. This course provides you with an overview of the Occupational Safety and Health Administration General Industry Designated Training Topics. The course is intended to provide entry level general industry workers a broad awareness on recognizing and preventing hazards in a general industrial setting. The training covers a variety of safety and health hazards which a worker may encounter at a general industry site.

CPT 102 Quality Practice & Measurement (3)
In order to meet a customer's needs, quality consistent product must be produced. This is accomplished through the knowledge of the equipment operator. Each machine operator determines both the quality and quantity of production from his/her equipment. In this course you will learn basic Quality Practices and Measurements that will enable you to produce high quality products.

CPT 103 Manufacturing Process & Produc (3)
Upon successful completion of this course, the student should be able to identify the job skills necessary to have a successful career. Topics include listening skills, oral communication, human relations, decision making/problem solving, how to work as a team, and resource management.

CPT 104 Maintenance Training (3)
Preventive maintenance and production housekeeping are very important aspects of equipment operations. In this course the student will learn how to monitor production equipment for both routine and preventive maintenance.

CRN 126 PC Hardware Fundamentals (4)
This course introduces the skills required of entry-level information and communication technology support professionals. The curriculum covers the fundamentals of personal computer (PC) hardware; network, laptop, and printer operations; and introduces advanced concepts surrounding this continuously evolving field of work. Students in this course will practice describing the internal components of a computer, assembling computer system hardware, installing operating systems, and troubleshooting via system tools and diagnostic software. Hands-on laboratory exercises help students develop critical thinking and problem-solving skills. Additionally, this course offers preparation for the CompTIA A+ Certification Core 1 Exam.

CRN 136 PC Software Fundamentals (4)
This course provides a comprehensive overview—and introduction to advanced concepts—of computer operating systems. Students will practice installing and troubleshooting operating systems using tools and diagnostic software. Practical applications include connecting computers to the internet and sharing resources in a networked environment. Hands-on laboratory experiences help students develop critical thinking and complex problem-solving skills. Additionally, this course offers focused preparation for the CompTIA A+ Certification Core 2 Exam.

CRN 146 Fund of Computer Networking (4)
This course examines the skills necessary to design and implement functional data networks, configure and manage essential network devices, and deploy technologies that improve security, scalability, and resiliency in data networks. Hands-on laboratory exercises help students develop critical thinking and complex problem-solving skills. Additionally, this course offers focused preparation for the CompTIA Network+ Certification Exam. Prerequisites: A grade of "C" or better in CRN 126 and CRN 136.

CRN 156 Network Operating Systems I (4)
This course covers configuration of advanced Windows Server services using on-premises and hybrid technologies. Students will practice leveraging the hybrid capabilities of Microsoft Azure, migrating virtual and physical server workloads to Azure Infrastructure-as-a-Service (IaaS), and securing Azure virtual machines running Windows Server editions. This course highlights administrative tools and technologies including Windows Admin Center and PowerShell. Hands-on laboratory exercises help students develop critical thinking and complex problem-solving skills. Additionally, this course offers focused preparation for the Administering Windows Server Hybrid Core Infrastructure Certification Exam. Prerequisites: A grade of "C" or better in CRN 146

CRN 166 Network Operating Systems II (4)
This course explores Linux server administration competencies, focusing on core administrative tasks and providing a foundation for those planning to pursue work as fulltime Linux system administrators. Topics of study include key command-line concepts and enterprise-level tools—storage configuration and management; provisioning of Red Hat Enterprise Linux systems; management of security tools, including SELinux; task scheduling; management and troubleshooting of the boot process; basic system tuning; and command-line automation and productivity. Hands-on laboratory exercises help students develop critical thinking and problem-solving skills. Additionally, this course offers focused preparation for the Red Had Certified System Administrator (RHCSA) exam. Prerequisites: A grade of "C" or better in CRN 146

CRN 176 Desktop Operating Systems (4)
This course introduces administrative tasks over a wide variety of desktop operating systems. Hands-on laboratory exercises will help students develop a deeper understanding of Microsoft Windows, Linux, and macOS desktop operating systems.

CRN 186 Network Security Fundamentals (4)
This course explores the skills necessary to assess and secure enterprise environments, protect hybrid systems against emerging threats, and securely implement identity access management controls. Students will develop skills to detect and respond to security incidents while ensuring compliance with applicable laws and governance frameworks. Hands-on laboratory experiences help students develop critical thinking and problem-solving skills. Additionally, this course offers focused preparation for the CompTIA Security+ certification exam. Prerequisites: A grade of "C" or better in CRN 146

CRN 221 Intro to Enterprise Networking (2)
This course introduces the architecture, functions, components, and models of converged enterprise networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. At the end of this course, students will be able to describe advances in modern network technologies; explain how network protocols, services, and media interact to enable communication across data networks; convert between decimal, hexadecimal, and binary number systems; and calculate an IPv4 subnetting scheme to efficiently segment networks.

CRN 226 Intro Enterprise Netwrking Lab (3)
This laboratory course compliments the CRN 221 lecture course. Laboratory exercises provide hands-on applications to understand fundamental TCP/IP network concepts. At the end of this course, students will be able to design and deploy classless, hierarchical IP address schemes; build simple, small office Ethernet networks; establish and troubleshoot basic configuration parameters on Cisco routers and switches via command-line interface (CLI); and utilize common network utilities to verify network operations. Prerequisites: A grade of “C” or better in CRN 221 or concurrent enrollment

CRN 231 Routing & Switching Essentials (2)
This course examines the architecture, components, and operation of reliable, switched networks in the enterprise. At the end of this course, students will be able to calculate IPv6 subnets to effectively segment networks; compare the operations of transport layer protocols in supporting end-to-end communication; describe device-hardening procedures for network equipment; explain how data link frames are forwarded in switched networks; and describe the purpose and operation of VLANs, inter-VLAN routing, Spanning Tree Protocol (STP), and EtherChannel. Prerequisite: A grade of "C" or better in CRN 221

CRN 236 Routing/Switching Essntls Lab (3)
This laboratory course compliments the CRN 231 lecture course. Laboratory exercises provide hands-on applications to understand the implementation, maintenance, and troubleshooting of advanced switching technologies in enterprise data networks. At the end of this course, students will be able to configure routers and switches with IPv6 addressing and device hardening features; configure inter-VLAN routed networks utilizing the IEEE 802.1q protocol; configure and troubleshoot Spanning Tree, Rapid Spanning Tree, Per-VLAN Spanning Tree, and Rapid Per-VLAN Spanning Tree protocols; and implement EtherChannel on switched links. Prerequisite: A grade of "C" or better in CRN 231 or concurrent enrollment.

CRN 240 Workplace Skills I (2)
This course prepares students to compose and present information often required of technical professionals. Students will create technical summary documents, sets of instructions, technical illustrations, and technical presentations. Students will develop a professional standard for dress, behavior, and communication appropriate for field professionals.

CRN 241 Scaling Networks (2)
This course builds upon concepts learned in earlier courses, focusing on scalability and reliability in enterprise data networks. At the end of this course, students will be able to describe characteristics and operations of Dynamic Host Configuration Protocol (DHCP), Stateless Address Autoconfiguration (SLAAC), first-hop redundancy protocols (FHRPs), switch port security, wireless local area networks (WLANs), and static routing. Prerequisite: A grade of "C" or better in CRN 231

CRN 246 Scaling Networks Lab (3)
This laboratory course compliments the CRN 241 lecture course. Laboratory experiences provide hands-on applications to understand the implementation and maintenance of technologies for scalability and reliability in enterprise data networks. At the end of this course, students will be able to implement and troubleshoot networks including Stateless Address Autoconfiguration (SLAAC), Dynamic Host Configuration Protocol (DHCP), Hot-Standby Routing Protocol (HSRP), switch port security, wireless local area networks (WLANs), and static routing configurations. Prerequisite: A grade of "C" or better in CRN 241 or concurrent enrollment

CRN 251 Connecting Networks (2)
This course explores the architecture, components, and technologies deployed often deployed in wide-area communications used in the enterprise, with a focus on security and automation. By the end of this course, students will be able to describe the implementation and operation of single-area OSPFv2, IPv4/IPv6 access control lists (ACLs), Network Address Translation (NAT), VPNs, IP Security (IPSec), Quality of Service (QoS), network management protocols, network virtualization, and network automation. Prerequisite: A grade of "C" or better in CRN 241

CRN 256 Connecting Networks Lab (3)
This laboratory course compliments the CRN 251 lecture course. Laboratory experiences provide hands-on applications to understand implementation and maintenance of technologies that enhance the reliability, security, and quality of service in enterprise data networks. By the end of this course, students will be able to configure and troubleshoot single-area Open Shortest Path First version 2 (OSPFv2), access control lists (ACLs) for IPv4 and IPv6 networks, Network Address Translation (NAT) for IPv4 networks, virtual private network (VPN) technology, Quality of Service (QoS) classification and marking, Simple Network Management Protocol (SNMP), and Syslog. Prerequisite: A grade of "C" or better in CRN 251 or concurrent enrollment

CRN 265 Workplace Skills II (2)
This course prepares students with the documents and skills required to enter the highly competitive technical support field. Students will practice composing and refining effective cover letters and resumes, participate in mock interviews, and identify professional resources and levels of industry certification. Students will practice workplace appearance, behavior, and communication appropriate for field professionals.

CUA 100 Culinary Math (4)
This course develops students' math skills that are vital to the food service industry. These skills include working with conversions of weights, measuring and calculating food cost, portion costs, labor control, and portion control which are all vital skills in becoming a great chef.

CUA 110 Sanitation/Safety (3)
This course covers sanitation and food safety by instructing the students on the regulations imposed by the State of Kansas Food Code that must be followed during the production of food for consumption by the public. It is a prerequisite to all other courses in the culinary arts program. Successful completion of the course will provide the student with methods of controlling the spread, growth, and elimination of bacteria and other food borne pathogens, as well as controlling physical contamination threats to foods. The student will also be able to perform safely in all areas of kitchen operations including the lifting and transporting of food and equipment, and have an awareness of safely handling hazardous materials along with knowledge of fire awareness, suppression, and avoidance, as well as avoidance of burns and lacerations. Safe equipment operation, maintenance, and cleaning are explained and no student is allowed to operate any power equipment until having its operation demonstrated by the instructor. Proper knife selection and handling is explained and demonstrated by the instructor. Sanitation and safety are continually brought by and related to current activities throughout the length of the program.

CUA 120 Basic Cooking Principles (5)
This course covers the most basic and some of the most important concepts in culinary arts profession. This course is a prerequisite for all later courses in the program. Upon completion of the student will have full vocabulary of cooking terminology and be able to identify the moist and dry heat methods of heat transfer as well as how equipment and materials provide heat and affect the cooking process. The student will be able to identify the components of recipes as well as how to read, interpret, price, and convert them. The student will be capable of utilizing the various ways product in the kitchen are measured and portioned along with the economic ramifications of proper implementation of these skills. Topics also include menu design and the factors involved in it along with the basic nutritional considerations and terminology that relate to it. Students also will be conversant on kitchen organization, prioritization of tasks, and time management in the face of deadlines. Students will use basic preparation tasks and knife skills. This course includes lecture, demonstration, and lab opportunities to apply knowledge and skills in food preparation.

CUA 128 Food Prep 1-A (3)
This course presents relevant information and training about standard commercial and institutional food preparation as it relates to the preparation of stocks, sauces, and soups. Upon completion, the student will be able to identify the ingredients and methods of production of stocks, reductions, and glazes. They will be capable of classifying and preparing sauces, thickening agents used, sauce families, production methods, finishing techniques, and producing and classifying soups. This course includes lecture, demonstration, and lab opportunities to apply knowledge and skills in food preparation.

CUA 130 Food Prep I (6)
This course presents relevant information and training about standard commercial and institutional food preparation as it relates to the preparation of stocks, sauces, soups, and red meats. Upon completion, the student will be able to identify the ingredients and methods of production of stocks, reductions, and glazes. They will be capable of classifying and preparing sauces, thickening agents used, sauce families, production methods, finishing techniques, and producing and classifying soups. The student will understand the composition, structure, and quality factors involved in utilizing red meats. Topics such as the basic cuts available and carcass structure, as well as selection of the various market forms available and an overview of cooking methods as it relates to tenderness and methods of determining doneness of meats will be explored. This course includes lecture, demonstration, and lab opportunities to apply knowledge and skills in food preparation.

CUA 135 Food Prep II (6)
This course presents relevant information and training about standard commercial and institutional food preparation as it relates to the understanding and preparation of poultry, seafood, and vegetables. Upon completion, the student will conversant in the composition and classification of poultry, seafood, and vegetables. The student will be able to properly handle, butcher, prepare, and determine doneness of these products. This course includes lecture, demonstration, and lab opportunities to apply knowledge and skills in food preparation. This is a 6 credit hour intermediate level course consisting of 45 hours of classroom work and 90 hours of lab experience.

CUA 210 Basic Management Skills (3)
This course introduces the student to the nature of food service management philosophy. It gives the student an overview of management goals in the industry. Cost and sales concepts are discussed along with control processes. Cost, volume, and profit relationships are also examined along with customer service concepts are examined as well. Students will have hands-on experience with scheduling, conducting inventory, along with menu development and costing.

CUA 215 Food Prep III (5)
This course presents relevant information and training relating to commercial and institutional preparation of vegetables, potatoes, legumes, pastas, and other starches, along with salads and dressings. The student will be able to use various preparation methods in order to control changes in the color, flavor, texture, and nutritional content of these products. Topics included are the vegetarian diet as well the preparation of the various types of salads, dressings, and the types of emulsions involved in preparing them. This course includes lecture, demonstration, and lab opportunities to apply knowledge and skills in food preparation.

CUA 220 Workplace Skills (1)
This course utilizes Key Train software to assist in advancement of knowledge. A Level 4 in Applied Math and Reading for Information and a Level 3 in Locating Information Work Keys assessments are required prior to exiting the program. Students will also be required to attend seminars provided through the Career Resource Center. Seminar which includes interview techniques, developing and preparing a resume, completing job applications, ethics, and teamwork.

CUA 230 Food Prep IV (3)
This course presents relevant information and training relating to commercial and institutional preparation of sandwiches, hors d'oeuvres, breakfast preparations, and dairy and cheese products. The student will be able to prepare various common types of sandwiches and canapés, cocktails, relishes, and dips using typical methods. The student will also be able to prepare egg products and custards, dairy and cheese products, and breakfast beverage preparations. This course includes lecture, demonstration, and lab opportunities to apply knowledge and skills in food preparation.

CUA 235 International Cuisine (4)
This course gives students the opportunity to learn about other countries and cuisines from around the world. Students will investigate imports and exports, produce indigenous foods, and apply new cooking techniques from a variety of countries around the world.

CUA 240 Baking Principles I (4)
This course presents relevant information and training relating to commercial preparation of bakery products and ingredients used. This includes discussion of baking formulas and baking percentages. Dough and batter mixing and the information of gluten are covered along with the baking process. Primary ingredients and their use in the bake shop are examined. An initial look at bakery production is made through examining artisan and sour dough breads and the production of lean and rich dough yeast breads.

CUA 245 Baking Principles II (4)
This course presents relevant information and training relating to commercial and institutional preparation of bakery products and ingredients used. This includes the preparation of quick breads, syrups, creams, sauces, pies, pastries, tarts, cakes, cookies, and decorative sugar and chocolate pieces.

DEM 111 Shop Skills & Safety Fundament (1)
The focus of this course is the ability to safely work with shop equipment commonly found in a diesel servicing and repair facility. Emphasis is using, maintain and servicing shop equipment such as hoists, lifts, safety stands, cranes, presses and grinders. The location and usage of personal protective equipment (PPE) and of common hand tools is included.

DEM 113 Electrical/Electronic Systems (5)
Systems studies the principles of electricity through operations and testing procedures and provides an introduction to electronics. Diagnostics and repair of starting and charging electrical systems are covered, in addition to practical applications of the principles of electricity. Electronic management programs are referenced and studied.

DEM 116 Workplace Skills (1)
Overview and practice of general workplace skills including personal effectiveness, time management, teamwork, and critical thinking in the workplace. The course incorporates skill development in the following three units: overview of diesel technology, workplace communication and customer service, and job application.

DEM 123 Hydraulics (5)
Principles of basic hydraulics, introduction to hydraulics systems: open center, closed center, and pressure and flow compensating type systems.

DEM 134 Scanner Diagnostics (1)
Scanner Diagnostics focuses on the hands-on application of aftermarket diagnostic equipment and tools such as the Snap-on Pro-link and Modis as well as OEM systems utilized by Cummins, CASE and others. Prerequisites: DEM 148 Advanced Electrical/Electronic Systems

DEM 138 Suspension and Steering (3)
Suspension and Steering addresses the theory, operations and troubleshooting of various steering and suspension system components.

DEM 143 Brakes (3)
Brakes will cover the theory and operations of hydraulic and air brake systems, teaching troubleshooting, disassembly, inspection and adjustments of hydraulic and air brake systems, including ABS.

DEM 148 Advncd Electrl/Electrnc Systms (5)
Construction machine electrical schematic reading, troubleshooting, diagnosis, and repair of monitoring systems, instrumentation, and other specialized electronic and computer-controlled equipment on CASE Construction machinery and heavy equipment. Students will determine proper use of wiring schematics to troubleshoot electrical systems on light through heavy vehicles. Prerequisites: DEM 113 Electrical/Electronic Systems

DEM 221 Drive Trains (3)
The Drive Trains 1 course will include classroom and/or shop exercises in: characteristics and principles of power trains units. Specific topics include introduction to diesel drive trains, drive shafts, power take-offs, and standard transmissions. Also the procedures in disassembly, wear analysis, and failure analysis. Instruction will be included in these types of transmissions and differentials: Mack, Rockwell Eaton and Dana Spicer. Students will be expected to observe and comply with all safety rules and regulations.

DEM 231 Diesel Engines I (5)
Diesel Engines I introduces the theory of operation and the use of the engine's mechanical components; disassembling, inspecting, measuring, reassembling and performing maintenance procedures on diesel engines.

DEM 241 Advanced Diesel Engines (5)
Advanced Diesel Engines course will include classroom and/or shop exercises: basic principles of the various engine systems, the disassembly and inspection, reconditioning of component parts to include various fuel systems. In addition, engine diagnosis and maintenance will be discussed and performed in various engine systems. Students will be expected to observe and comply with all safety rules. Prerequisites: DEM 231 Diesel Engines I

DEM 248 Drive Trains II (3)
Drive Trains II builds on the knowledge, skills and abilities obtained in DEM221. Systems utilized in light, medium and heavy truck drive trains including: automatic transmissions, drive axles, procedures in disassembly/assembly, wear analysis, and failure analysis in drive trains, pressure and flow testing of drive train systems, timing of drive train systems, and theory and operation of final drives and shuttles are included. Prerequisite: DEM221 Drive Trains

DEM 250 Engine Performance (2)
Engine Performance covers the engine control and emission control systems such as fuel injection, air induction, exhaust, exhaust gas treatments/filters utilized on light, medium and heavy diesel trucks. Students are introduced to diagnostic equipment and tools such as the Snap-on Pro-link and Modis as well as OEM systems utilized by Cummins, CASE and others. Prerequisites: DEM 241 Advanced Diesel Engines

DEM 265 Diesel Internship I (3)
Students will apply for and secure an internship or other work-based learning experience in the diesel industry. The student will work under the guidance of an assigned industry mentor at their internship location. Instructor may specify areas of specific need based on students needs and previous performance within the diesel department. Prerequisites: Instructor approval.

DEM 268 Aux Power Units/Refrigeration (2)
The function and purpose of Auxiliary Power Units (APUs) that power system when the primary engine is not in use, such as refrigeration units on tractor-trailers, are covered. This course includes basic air conditioning service, diagnostic, and repair on applications used in the diesel field and Section 509 Refrigeration certification by the Mobile Air Condition Society (MACS).

DEM 274 Diesel Preventative Maintenanc (3)
This course is designed to prepare students for entry-level jobs as a preventative maintenance diesel mechanic. Preventative maintenance diesel mechanics perform inspections and maintenance on diesel vehicles and equipment doing minor repairs and keeping maintenance records. The course series covers all the basic systems of a vehicle or equipment with an emphasis on preventative maintenance procedures and shop safety.

DEM 275 Diesel Internship II (3)
Students will apply for and secure an internship or other work-based learning experience in the diesel industry. The student will work under the guidance of an assigned industry mentor at their internship location. Instructor may specify areas of specific need based on students needs and previous performance within the diesel department. Diesel Internship II is a continuation of Diesel Internship I for those students wishing to continue the internship. Prerequisites: Instructor permission and DEM 265 Diesel Internship I.

ECE 100 Introduction to Early Childhood Education (3)
This course introduces students to the fundamentals of early childhood education. It will include an introduction on developmentally appropriate practice, curriculum methods and materials, including technology, and connect to early learning standards.

ECE 112 Preschool Development (3)
The focus of this course is on the development, implementation and assessment of appropriate environments and curricula for young children ages three through five. Emphasis is on understanding children's developmental stages and developing appropriate learning opportunities, interactions and environments.

ECE 119 Creative Experiences for Young Children (3)
This course is a study of constructing and maintaining a developmentally appropriate environment for young children that fosters aesthetic sensitivity and creativity. It focuses on the selection, construction, use of materials for experiences that encourage the young child's creativity, and development through visual arts, dramatic play, and music.

ECE 127 Child Health, Safety, & Nutrition (3)
This course is the basic study of health, nutrition, and safety management practices for young children. Includes instruction on CPR/ First Aid.

ECE 131 Children with Special Needs (3)
This course will enable the student to develop skills associated with providing quality care and education to young children with disabilities and chronic conditions. The student will explore issues of positioning, feeding, adaptive equipment, family dynamics, inclusion, and invasive procedures.

ECE 135 Infant & Toddler Development & Care (3)
This course focuses on the growth and development of the child from birth through age two. An in-depth look at the unique learning environment required for infants and toddlers will provide an understanding of how to create and maintain safe and healthy environments that promote physical and intellectual competency as well as support social and emotional development. Outcomes will also include the development of programs that include collaborative partnerships with parents and community resources for servicing infant and toddler needs.

ECE 141 Early Language & Literacy Development (3)
This course is designed to teach students how to recognize and implement appropriate environmental strategies that support early literacy development and appropriate early experiences with books and writing. Emphasis is placed on speaking and listening, as well as reading and writing readiness. Upon completion of the course, students will be able to select, plan, implement, and evaluate appropriate early literacy experiences.

ECE 148 Early Childhood Education Lab I (3)
This course involves participation in the licensed early learning center under supervision of the unit leader. Students use knowledge and skills expected of professionals new to the early childhood education field.

ECE 151 Early Childhood Curriculum Development (3)
This course explores the principals involved in planning, implementing and evaluating developmentally appropriate, evidence-based curriculum for young children.

ECE 155 Early Childhood Education Lab II (3)
This course is the second lab course in the program that involves participation in the licensed early learning center under supervision of the unit leader. Students use knowledge and skills expected of professionals new to the early childhood education field.

ECE 200 Developing Family Relationships (3)
This course will assist students in developing guidance skills, handling guidance challenges, establishing classroom rules, and involving parents and family.

ECE 202 Administration in Early Childhood (3)
This course will enable the student to implement the principles of administration and organization of childcare programs. The student will focus on record keeping, budgeting, facility management, family involvement, and the hiring, training, supervision, and evaluation of staff.

ECE 205 Foundation of Education (3)
This course is designed to acquaint students with the education profession and to help them develop a realistic understanding of teaching, learning, and leadership. Students will examine motives for teaching, explore the qualities of effective teachers and leadership, and discuss the various diversities teachers encounter as well as the implications for teachers and learning. Students will begin to identify strategies and options for successful classroom practice.#Ethical, legal, and controversial issues affecting education today will be addressed along with how to become a teacher leader in the profession.

ECE 212 Children's Play and Games (3)
This course is designed to stress the importance of play learning attitudes and environments. Students learn the importance of movement in relation to what children learn, and that play environments should encourage children to explore, imagine, invent, and express feelings.

ECE 227 Early Childhood Education Internship (3)
This course involves students being placed in an early learning center to learn to work with professionals in the field, understand the type of dedication needed, and to observe the working operations of an early learning center. Course will culminate with an early childhood education portfolio.

EDU 100 Introduction to Teaching Field Experience (1)
Designed to allow para education students to spend an extended period of time in an appropriate classroom working with a cooperating teacher to plan, implement and assist in instruction.

ELE 120 National Electrical Code I (4)
This is an introductory course on the use and interpretation of the current National Electrical Code. The student will develop a working knowledge of the code which will permit them to apply it to everyday applications. The course will include the requirements for electrical installation, wiring design and protection, methods and materials used, equipment for general use, special occupancies equipment, and condition.

ELE 125 AC/DC Circuits I (4)
This course introduces students to the basic of alternating current and direct current circuits. The student will perform calculations using Ohm's law and the study the construction, operation and purpose of resistors, potentiometer, switches, fuses, relay capacitors, inductors, batteries, alternators, transformers, and series-parallel resonant circuits. Students will build basic AC and DC circuits using multi meter and oscilloscope.

ELE 127 International Res Code I (1)
The IRC (International Residential Code) is the understanding of building of single and two-family dwellings. The student will develop a working knowledge of the code and standards of constructing a dwelling. The electrical student needs the understanding of basic building design to do their work more efficiently. The course will include the requirements for scope and administration, definitions, and building planning.

ELE 132 Print Reading (2)
Print Reading introduces the student to the fundamentals of interpreting construction drawings. Students will learn to interpret plan views, elevation views, sections, details, schedules, specifications, symbols and abbreviations found on most residential, commercial, and industrial construction drawings.

ELE 135 Commercial Wiring I (4)
In Commercial Wiring I, the student will study the theory, practice, and National Electrical Code requirements for commercial wiring. The course consists of definitions, formulas, wiring methods, overcurrent protection, calculation and sample examinations. Wiring projects are also assigned to put the theories learned in the classroom into practice.

ELE 137 International Residential Code (3)
The IRC (International Residential Code) is the understanding of building of single and two-family dwellings. The student will develop a working knowledge of the code and standards of constructing a dwelling. The electrical student needs the understanding of basic building design to do their work more efficiently. The course will include the requirements for scope and administration, definitions, and building planning. The course will also include general requirements, electrical definitions and services, branch circuit and feeder requirements, wiring methods, and power and lighting distribution.

ELE 140 Residential Wiring I (4)
This course is an introduction to residential wiring methods that includes practical application and hands on experience in implementing code requirements. The student will gain the necessary skills to wire a residence to meet the minimum requirements as set forth in the current National Electrical Code for residential occupancies.

ELE 142 National Electrical Code II (4)
This course is a continuation of the National Electrical Code I course on the use and interpretations of the current national electric code (NEC Chapters 5-9).

ELE 147 International Res Code II (1)
The IRC (International Residential Code) is the understanding of building of single and two-family dwellings. The student will develop a working knowledge of the code and standards of constructing a dwelling. The electrical student needs the understanding of basic building design to do their work more efficiently. The course will include general requirements, electrical definitions and services, branch circuit and feeder requirements, wiring methods, and power and lighting distribution.

ELE 220 Electricity II (6)
This course features a highly illustrated design, technical hints and tips from industry experts, review questions and a whole lot more! Key content includes: Alternating Current, Motors: Theory and Application, Electric Lighting, Conduit Bending, Pull and Junction Boxes, Conductor Installations, Cable Tray, Conductor Terminations and Splices, Grounding and Bonding, Circuit Breakers and Fuses, Control Systems and Fundamental Concepts.

ELE 230 Electricity III (6)
This course features a highly illustrated design, technical hints and tips from industry experts, review questions and a whole lot more! Key content includes: Load Calculations – Branch and Feeder Circuits, Conductor Selection and Calculations, Practical Applications of Lighting, Hazardous Locations, Overcurrent Protection, Distribution Equipment, Transformers, Commercial Electrical Services, Motor Calculations, Voice, Data, and Video, and Motor Controls.

ELE 250 Electrical OJT (6)
This course features a is a hands-on method of teaching the skills, knowledge, and competencies needed for employees to perform in the field of electrical work. Students learn in an environment where they will need to practice the knowledge and skills obtained during their training.

EMS 105 Emergency Medical Responder (5)
This course is approved by the Kansas Board of Emergency Medical Services (KSBEMS). It is based on current information and techniques considered the responsibility of the EMR according to the National Highway Traffic Safety Administration, National Standard Curriculum, as enriched by the KSBEMS Education Standards. This course exceeds the state and national requirements and consists of 76 hours of didactic and 41 hours of psychomotor skills in the classroom and at least 12 hours of Field Internships. The curriculum covers didactic and practical skills instruction, skills demonstrations, clinical experience and/or orientation to the emergency room and to the ambulance, extrication class, or in contrived experiences of patient care.

EMS 110 EMT: Foundations of EMT (3)
This course is approved by the Kansas Board of Emergency Medical Services (KSBEMS). It is based on current information and techniques considered the responsibility of the EMT according to the National Highway Traffic Safety Administration, National Standard Curriculum, as enriched by the KSBEMS Education Standards. This is the initial course in a series of three courses required to complete the EMT program and sit for the national exam. The focus of the first course includes introduction to EMS systems, medical terminology, the human body and introduction to patient assessment. This course exceeds the state and national requirements and consists of 42 hours of didactic and 32 hours of psychomotor skills in the classroom. The curriculum covers didactic and practical skills instruction, skills demonstrations, clinical experience and/or orientation to the emergency room and to the ambulance, extrication class, or in contrived experiences of patient care.

EMS 120 EMT: Assessment & Medical Management of Patients (3)
This course is approved by the Kansas Board of Emergency Medical Services (KSBEMS). It is based on current information and techniques considered the responsibility of the EMT according to the National Highway Traffic Safety Administration, National Standard Curriculum, as enriched by the KSBEMS Education Standards. This is the second course in a series of three courses required to complete the EMT program and sit for the national exam. The focus of this course includes patient assessment, airway management, pharmacology, systems review, and special populations. This course exceeds the state and national requirements and consists of 42 hours of didactic and 29 hours of psychomotor skills in the classroom. The curriculum covers didactic and practical skills instruction, skills demonstrations, clinical experience and/or orientation to the emergency room and to the ambulance, extrication class, or in contrived experiences of patient care.

EMS 130 EMT: Assessment & Trauma Management of Patients & Special Populations (3)
This course is approved by the Kansas Board of Emergency Medical Services (KSBEMS). It is based on current information and techniques considered the responsibility of the EMT according to the National Highway Traffic Safety Administration, National Standard Curriculum, as enriched by the KSBEMS Education Standards. This is the final course in a series of three courses required to complete the EMT program and sit for the national exam. The focus of this course includes EMS operations, incident management, final cognitive review and exam, and final practical review and exam. This course exceeds the state and national requirements and consists of 26 hours of didactic and 31 hours of psychomotor skills in the classroom. The curriculum covers didactic and practical skills instruction, skills demonstrations, clinical experience and/or orientation to the emergency room and to the ambulance, extrication class, or in contrived experiences of patient care.

EMS 200 Advanced Emergency Medical Technician I: Medical Emergencies (5)
This is the initial course required to complete the AEMT program and sit for the national exam. This course addresses current information and techniques considered the responsibility of the AEMT according to the National Highway Traffic Safety Administration, National Standard Curriculum, as enriched by the KSBEMS Education Standards. The focus of the course includes introduction to medical terminology, the human body, advanced patient assessment and advanced pharmacology. Topics include: didactic and practical skills instruction, skills demonstrations, clinical experience and/or orientation to the emergency room and to the ambulance, extrication class, or in contrived experiences of patient care. Prerequisites: Successful completion of EMT certificate.

EMS 205 Advanced Emergency Medical Technician II: Trauma Emergencies (5)
This course is a continuation of EMS 200 with a focus on didactic and practical skills instruction, skills demonstrations, clinical experience and/or orientation to the emergency room and to the ambulance, extrication class, or in contrived experiences of patient care. Prerequisites: Successful completion of EMT certificate. Corequisite: EMS 200

EMS 210 Advanced Emergency Medical Technician: Field Internship I (5)
This course will enable the student to have hands-on experience utilizing the knowledge and skills gained in the previous courses. The student will be supervised and evaluated by an assigned preceptor on the ability to assess and manage traumatic and medical emergencies. The student will be evaluated in the classroom, field, and clinical setting. Prerequisites: Successful completion of EMT certificate. Corequisite: EMS 200 and EMS 205

EMS 215 AEMT Internship II (5)
This course is a continuation of EMS 210. Students will have hands-on experience utilizing the knowledge and skills gained in the previous courses. The student will be supervised and evaluated by an assigned preceptor on the ability to assess and manage traumatic and medical emergencies. The student will be evaluated in the classroom, field, and clinical setting. Prerequisites: Successful completion of EMT certificate. Corequisites: EMS 200, EMS 205, EMS 210

GEN 101 Workplace Skills and Safety (3)
This course focuses on communication concepts, skills and behaviors, and safety practices utilized in the workplace. The course demonstrates the relationships between listening; oral communication; human relations skills; problem-solving and teamwork dynamics; time and resource management; and work ethics and job interviewing; with success in a student's desired field.

GEN 102 Workplace Skills (2)
This course focuses on communication concepts, skills and behaviors, and safety practices utilized in the workplace. The course demonstrates the relationships between listening; oral communication; human relations skills; problem-solving and teamwork dynamics; time and resource management; and work ethics and job interviewing; with success in a student's desired field.

GRP 110 Graphic Design I (4)
This course summarizes the role served by graphic communications in a technological society and identifies the basic functions of the industry. Covers the fundamental principles and elements of design including color composition, graphics types (raster based, vector based), typography, and general layout principles used by graphic designers in the production of visual images.

GRP 121 Color Composition (4)
This course will introduce the use of color and composition as they relate to imaging rules of creative element placement and design of an image. Students will learn the psychology of color and how color can affect the message of the design. Prerequisite: GRP110.

GRP 123 Adobe Lab I (2)
This course introduces students to design software such as Adobe InDesign, Adobe Illustrator and Adobe Photoshop.

GRP 133 Page Layout (4)
This course will teach composition techniques and procedures utilizing page layout software. Students will explore formatting, alignment, spacing, breaks, tabs, tables, lists, drop caps, margins, columns, and become familiar with typographic details. They will apply page layout techniques to create balanced and professionally designed materials. Course will also cover Paper & Bindery skills, including the different types of paper and other substrates used for printing, various finishing methods and binding techniques.

GRP 141 Graphic Design II (4)
This course covers the intermediate principles and elements of design and general layout principles used by graphic designers in the production of visual images. This course will give students the opportunity to work within groups and begin development of skills used when working with clients. Students may complete client projects, branding guides, marketing packages, etc. Prerequisites: GRP 110 Graphic Design I

GRP 143 Typography (2)
This course will introduce the use of different styles of typography and how to use them more creatively. Students will learn how different styles of typography can affect the message of the design as well as add impact to their designs.

GRP 148 Vector Based Graphics (3)
A study and use of vector graphics for production. Skill development in the use of the tools and transformation options of Adobe Illustrator to create complex vector illustrations for print and web-based media. Mastery in manipulation of both text and graphics with emphasis on the use of the pen tool as well as the correct use and management of different color modes. Focus on software tools and techniques to capture, correct, create and combine images for print and web. Topics include input devices, resolution, tone and color correction, retouching, painting, drawing, image manipulation, compositing, automation, graphic formats, design and reproduction considerations, interview skills with clients to obtain information. This course continues to master skills in design software such as Adobe Indesign, Adobe Illustrator and Adobe Photoshop.

GRP 163 Digital Printing (3)
Principles of digital imaging technology and the different types of equipment and methods involved in electronic image capture are learned in this course. Students also learn how to prepare digital design and imaging files for successful output. This course will teach proper workflow techniques from file generation to print production. Emphasis is placed on troubleshooting and managing files as well as determining proper file structure based on the required output.

GRP 223 Adobe Lab II (2)
This is an intermediate level course covering design software such as Adobe InDesign, Adobe Illustrator and Adobe Photoshop. At the completion of the course students will be prepared to earn industry certifications in these areas. Prerequisites: GRP 123 Adobe Lab I

GRP 233 Graphic Design III (5)
This course covers the advanced principles and elements of design and layout principles used by graphic designers in the production of visual images. The projects will become directed more toward working with clients and workplace skills. Students learn to evaluate the project and determine appropriate timeline and tools needed to accomplish the task. Students also learn how to manage multiple projects and deadlines successfully. The students will be given the opportunity to begin working with clients either in person or online. This course continues with advanced skills in design software such as Adobe Indesign, Adobe Illustrator and Adobe Photoshop.

GRP 241 Paper & Bindery (3)
This course covers the different types of paper and other substrates used for printing in the graphics industry. The course also covers various finishing methods and binding techniques.

GRP 244 Raster Based Graphics (4)
This course will teach image composition techniques and procedures utilizing raster graphics software such as Adobe Photoshop. Focus on software tools and techniques to capture, correct, create and combine images for print and web. Topics include input devices, resolution, tone and color correction, retouching, painting, drawing, image manipulation, compositing, automation, graphic formats, design and reproduction considerations. Prerequisite: GRP121

GRP 248 Graphic Design IV (5)
Students who have met grade and attendance requirements will work directly with clients. Students will advance the skills learned in Graphic Design III by further mastering the use of a tracer system and interview skills with clients to obtain information. This course continues to master skills in design software such as Adobe Indesign, Adobe Illustrator and Adobe Photoshop.

GRP 254 Production Graphics (4)
This course will provide students with an on-the-job experience in a graphics setting. May include on-campus virtual internship, job shadowing or off-campus internship.

GRP 258 Portfolio Preparation I (3)
This course will expose students to business operations, job management techniques, and employability skills. Students will learn the foundational computer skills necessary to prepare and organize work. The course covers the initial steps in developing a digital/physical portfolio, completing job applications, communication skills, ethics, and teamwork. Prerequisites: GRP 258 Portfolio Preparation I

GRP 260 Portfolio Preparation II (3)
Students will complete their digital/physical portfolio in this course. Students will develop and prepare a resume, complete work-based projects, and participate in mock interviews. Prerequisites: GRP 258 Portfolio Preparation I

HCT 105 First Aid & CPR (1)
This course is an introduction to basic first aid and included CPR certification. The course provides the basic information and skills needed to meet the Amercian Heart Association standards.

HCT 108 Health Occupations I (4)
Students will learn about a wide variety of careers in allied health fields, job settings, and required training/education and they will do so based upon a a body system approach. These careers will be studied utilizing basic disease/illness and wellness/prevention concepts, associated types of patient/disease processes, and the effects of wellness on these processes.

HCT 122 Medical Terminology (2)
The course introduces the student to the language of the medical field. Medical prefixes, suffixes, and combining forms are introduced to the student so they may have a thorough knowledge and understanding of what they are reading and writing in the medical field. An emphasis is placed on terms, pathological conditions, and diagnostic terms.

HCT 126 Medical Terminology (3)
The course introduces the students to the language of the medical field, including commonly used abbreviations. Medical prefixes, suffixes, and combining forms are introduced so they may have a thorough knowledge and understanding of what they encounter in the medical field. An emphasis is placed on body systems, conditions, diagnostic terms and medical specialties.

HCT 128 Nurse Aide (5)
This course provides the student with the knowledge and skills necessary to secure employment as a CNA in the workplace through a combination of classroom instruction, nursing lab skill demonstration/practice, and the opportunity to gain instructor supervised experience in a work setting. This program meets state guidelines for the Kansas Nurse Aide certification testing through Kansas Department of Aging and Disability Services.

HCT 134 Human Growth & Development (3)
This course provides an introduction to physical, cognitive, emotional, and social aspects of human development throughout the life span. It emphasizes developmental processes beginning with conception and continuing throughout childhood, adolescence, adulthood, later life and death. The course focuses on developmental processes, cultural influences, and other factors that make each individual unique. This course takes an inter-disciplinary approach toward human development that is based on science and applied toward the goal of solving important human problems.

HCT 135 CPR (0)
This course is an introduction to basic first aid and included CPR certification The course provides the basic information and skills needed to meet the American Heart Association standards.

HCT 136 Human Anatomy & Physiology (4)
This course is designed to introduce the student to the structure and function of the following body systems: skeletal, muscular, nervous,sensory, circulatory, respiratory, digestive, and urinary systems. This class offers information concerning normal human structures and functions and the developmental changes that occur during an individual's life span. Students will learn specific information about factors associated with expected and abnormal anatomical and physiological changes associated with the body's major organ systems. This course is designed for students who are interested in pursuing a career in a health occupation.

HCT 137 Human Anatomy & Physiology Lab (2)
This course provides opportunities to observe various anatomical parts and to investigate physiological phenomena. The student will relate specimens, models, microscope slides, and whole body information learned in lecture and read about in the textbook. Study of anatomy of major organ systems includes use of anatomical models and selected preserved animals and organs.

HCT 138 Home Health Aide (2)
This course is designed for the person seeking to provide direct care services to clients in their home. Home Health Aides assist other health care professionals in maintaining and restoring the client to optimum levels of physical and emotional well-being while allowing the client to remain at home. Upon completion of the course students are eligible to receive a certificate after passing the Kansas Department of Aging and Disability Services exam. Prerequisites: CNA certification

HCT 141 Nutrition (3)
This introductory course provides a basic knowledge of human nutrition. Students will learn the sources and functions of the various nutrients. They will also explore the interaction of diet, disease, prevention, and treatment. Through the use of computerized nutrition program, students will analyze their diets for nutritional deficiencies and excesses.

HCT 148 Medication Aide (5)
The Certified Medication Aide (CMA) course is designed for the person seeking work in a long-term care facility. The CMA course introduces the student to basic concepts of medication administration including drug classification, drug action, and nursing implications for specific drugs. Student's participation in hands-on experience in a clinical setting is an integral part of the course. Upon completion of the course, students are eligible to receive a Medication Aide certificate after passing the Kansas Department of Aging and Disability Services exam. Prerequisite: CNA certification

HCT 160 Fundamentals of Phlebotomy (2)
This course is designed to train individuals to properly collect and process blood and other clinical specimens for laboratory testing and to interact with health care personnel, clients, and the general public. Presentation includes equipment and additives, basic anatomy, and techniques for safe and effective venipuncture. Emphasis will be placed on collection techniques, specimen processing, Order of Draw, departments in the clinical laboratory, the tests analyzed in each department, and work flow practices.

HCT 164 Phlebotomy Lab (2)
This course provides the student with knowledge and practical application of basic laboratory skills with a focus on patient care. Students learn and practice basic skills in venipuncture, sterile technique, patient safety, and documentation. There is major emphasis on the critical elements of laboratory procedures and the scientific rationale for performing the procedures correctly.

HCT 166 Phlebotomy Clinical Practicum (2)
A health-related, work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts; direct supervision is provided by the clinical laboratory professional; course provides opportunities to practice phlebotomy skills in a clinical setting; safety, quality control and interpersonal communications will be stressed.

HCT 168 Phlebotomy National Exam Rev. (1)
This course is designed to prepare the student for the ASCP or NHA National Exam. The course will include practice test questions over the topics covered in the didactic course Fundamentals of Phlebotomy.

HCT 204 Microbiology w/ Lab for Health Professions (4)
This course offers a comprehensive study of the field of microbiology to health science majors. The course will give detailed insights into structure and function of microbes (cellular structures, metabolism, and growth), microbial genetics, microbial ecology, microbial diversity (prokaryotes, eukaryotes, viruses) and clinical microbiology (immunity, pathogenicity, epidemiology, control of microbes, and diseases). Lab component follows along with chapters of the text covering topics such as how to gram stain microbiology specimens, isolating a culture from a petri dish, testing organisms against common antibiotics, etc.

IND 103 OSHA 10-Hr Healthcare (1)
Safety Orientation/OSHA 10 provides the student with an overview of the OSHA standards relevant to the construction industry. Various topics are presented in a 15-hour format. Among the subjects covered in the course are: an introduction to OSHA, electrical safety, fall protection, and excavation and trenching safety.

IND 104 Basic Electricity (3)
This course is an introduction to electricity, basic electrical components and their characteristics, circuit schematics and basic analysis of series and parallel DC circuits. Hands-on labs help guide student learners to assimilate this material.

IND 105 OSHA - 10 Hr Gen Industry Cert (1)
This course is offered in an online or face-to-face format. For the online course, all course activities are completed through an interactive self- paced website. In the face-to-face format, a variety of classroom and/ or lab learning and assessment activities are used to present the material. In both formats students in this course will: explain job/ site safety and precautions for job/site hazards; determine the uses of personal protective equipment (PPE); identify the safety equipment and procedures related to safe work practices and environment; identify fire prevention and protection techniques; explore Hazardous Communications (HazCom) including Material Safety Data Sheets (MSDS).

IND 107 OSHA - 10 Hour Const Ind Cert (1)
This course provides the student with an overview of the OSHA standards relevant to the construction industry. Various topics are presented in a 10-hour format. Among the subjects covered in the course are: and introduction to OSHA, electrical safety, fall protection, excavation and trenching safety.

IND 109 OSHA - 30 Hour Const Ind Cert (2)
Students will learn basic OSHA regulations and safety. The students will also learn how to read the OSHA manual properly. The course will stress the importance of personal protective equipment; fall protection, hazard recognition and other topics connect to on the job site safety. The course will also provide the student with an understanding of current safety regulation, established safety practices, and the impact of behavior and environment on injury prevention.

IND 111 OSHA - 30 Hour Const Ind Cert (3)
This course provides an overview of the Occupational Safety and Health Administration Construction Training Topics. This course is intended to provide entry level construction workers a broad awareness on recognizing and preventing hazards on a construction site. This course will also address real world challenges that electrical workers face on a daily bases. It will introduce avoiding oversights that could result in shock and arc flash accidents. The material presented will emphasize the rules specified by the National Fire Protection Association (NFPA) using NFPA 70E standards. After taking this course, students will be able to take the arc flash certification test.

IND 112 Fluid Power I (3)
This course provides fundamentals of pneumatics, air compressors, control valves, pneumatic cylinders, and electro-pneumatic controls; and basic pump principles, centrifugal pumps, magnetic drive pumps, diaphragm pumps, metering pumps and pump seals. Students learn how to operate, install, troubleshoot, analyze performance, and design basic pneumatic systems and pump systems. Students will learn how to read basic fluid power schematics.

IND 114 AC/DC Circuits (4)
AC/DC circuits address the basics of direct and alternating current circuits.

IND 116 Lathe/Mill/Grind for I.M. (3)
This course covers fundamental manual machine operator skills and basic precision measuring techniques. Specific course topics include machines, tools and measurements to produce an end product. Participants work independently and as small teams in completing the hands-on lab activities. Students will learn how to read basic blueprints.

IND 118 Industrial Fluid Power (3)
This course examines theory, applications, and operation of industrial hydraulic and pneumatic systems. The inspection, maintenance and repair of the various components are covered in this course. Interpretation of the various schematic symbols used in hydraulic and pneumatic circuit diagrams will be discussed.

IND 119 Advanced Fluid Power (2)
This course builds upon foundational fluid power concepts by exploring advanced hydraulic and pneumatic control systems. Topics include electro-pneumatic, electro-hydraulic systems, and advanced control methods. Students will learn to design, analyze, and troubleshoot complex circuits, interpret advanced schematic symbols, and apply concepts to modern industrial applications. Prerequisites: IND 118 Industrial Fluid Power

IND 127 Mechanical Systems (3)
This course provides understanding of mechanical energy transmission concepts along with lab experience to operate, install, analyze performance, and design basic mechanical transmission systems using chains, v-belts and spur gears. Students also learn how to safely move loads of different shapes and sizes using a variety of methods.

IND 146 Industrial Welding Basics (3)
This course introduces basic concepts of Industrial welding. Hands-on lab activities are provided for the participant to apply knowledge and develop skills in the following areas: Shop Safety, basics into GMAW and GTAW welding. Participants will work independently and as small teams in completing the lab activities.

IND 147 Mechanical Systems Reliability (3)
This course provides understanding of mechanical energy transmission concepts along with lab experience to operate, install, analyze performance, and design mechanical drive systems using right angle gears, bearings and couplings. Students learn how to setup and operate laser shaft alignment and apply vibration analysis to various power transmission systems. Prerequisite/Corequisite: Mechanical Systems or consent of instructor.

IND 150 Industrial Pumps (2)
Topics covered in this course include basic pump principles, centrifugal pumps, magnetic drive pumps, diaphragm pumps, gear pumps, metering pumps and pump seals. Various pumps will be inspected, disassembled, reassembled and installed in working systems.

IND 152 Electrical Control Systems I (3)
This course is an introduction to electrical control systems with focus on control devices, electric motors, manual/electric/magnetic motor control and overload/over current protection and monitoring. Lab experience helps develop skills to operate, install, design, and troubleshoot AC electric motor control circuits for various applications. Students will learn to read and draw wiring and ladder drawings. Prerequisite: IND 104 AC/DC Circuits

IND 204 Electrical Control Systems II (3)
This course provides an understanding of Reversing Motor Circuits, Solid State Devices and System Integration, Timing and Counting Functions, Relays and Solid State Starters, Sensing Devices and Controls. Hands-on labs help guide student learners to assimilate this material. Prerequisites: IND104 AC/DC Circuits; IND152 Electrical Control Systems I.

IND 207 Fluid Power II (2)
This course focuses on understanding of hydrodynamics, hydraulic principles, hydraulic circuitry and diagrams, piping, hydraulic valves and actuators, accumulators, hydraulic circuit maintenance and fluid maintenance. Students learn to operate, install, analyze performance, and design hydraulic and electrohydraulic systems. Prerequisite: Fluid Power I or consent of instructor.

IND 213 Advanced ECS (3)
This course focuses on motion and position control systems; servo motors, servo system feedback devices, and variable frequency drives. Hands-on labs help develop skills to operate, install, tune, and troubleshoot major types of AC and DC drives. Prerequisite: IND104 and IND152; or consent of instructor.

IND 217 Programmable Logic Controllers (PLC) (3)
This course examines types, installation, programming procedures, and troubleshooting of programmable logic controllers (PLC). Hardware and programming aspects as well as ladder logic symbols and operations necessary to develop a PLC program are covered in this course. Prerequisite: Electrical Control Systems II, Industrial Fluid Power, or consent of instructor.

IND 223 Commercial & Industrial Wiring (3)
This course covers the routing, labeling, and the installation of wiring and components in an electrical control panel as well as wiring electric motors and external devices. This course also includes basic conduit bending and installation, selecting wire for an application, soldering, running network cables, and learning techniques to keep wiring and control panels tidy and organized. Prerequisites: IND104 and IND152

IND 247 Industrial Process Control (3)
This course provides understanding of different types of process control systems like temperature, flow and level control. The course includes process control principles, thermocouples, RTD's, temperature measurement devices, On/Off temperature controllers, programmable process heat controllers, transmitters, process loop test equipment and final control elements. Using this information students learn to construct, test and operate systems found in industrial applications. Prerequisites: Electrical Control Systems I, Advanced Fluid Power, or consent of instructor.

IND 248 Prog Logic Controllers II (3)
This course builds on the knowledge gained in 'Programmable Logic Controllers' and focuses on the fundamentals of installing and troubleshooting of industrial communications networks using Control Net ; operation, installation, configuration and troubleshooting of the Device Net field-device network; and Human-to-Machine Interface (HMI) using Allen Bradley and Control Logix PLCs.

IND 252 Industrial Robotics (3)
This course examines types, applications and troubleshooting of industrial robots and subsystems. Included in this course is the programming of industrial robotic control software.

IND 256 Robotics II (4)
This course builds on the knowledge gained in Industrial Robotics and focuses on sensors, end effectors, control systems and maintenance. Students learn advanced commands and operators, create simulation objects, configure objects and design work cells.

IND 257 Robotics II (4)
This course builds on the knowledge gained in 'Robotics I' and focuses on sensors, end effectors, control systems and maintenance. Students learn advanced commands and operators, create simulation objects, configure objects and design work cells.

LOP 140 Software for Legal Assistants (4)
An essential skill in legal support role is the understanding and proficiency in computer applications commonly used in the legal environment. In this course, the student will become proficient in programs, through instruction and hands on activities. These programs include word processing, spreadsheets and legal billing and timekeeping. Students will also learn applications and procedures for case management, docket control, legal research and litigation support.

MAT 100 Technical Math (2)
This course will enable the student to gain confidence with the use of basic math, measurements, and signed numbers. The concepts learned in this course will build problem solving skills that are critical in the workplace. These concepts develop a solid foundation for success in the use of technology.

MAT 101 Technical Math I (3)
This course will enable the student to gain confidence with the use of basic math, measurements, and signed numbers. The concepts learned in this course will build problem solving skills that are critical in the workplace. These concepts develop a solid foundation for success in the use of technology.

MAT 102 Technical Math II (3)
This course is a continuation of Technical Mathematics I. The concepts learned in this course will build on problem solving skills using geometry, algebraic expressions and techniques for solving equations. These concepts develop a solid foundation for success in the use of technology.

MOS 150 Medical Terminology (1)
This course familiarizes students to basic medical terminology and medical abbreviations used in a nursing care setting. The course is a component of and incorporated into the semester long program.

MTT 106 Safety (OSHA 10) (1)
Through a variety of classroom and/or lab learning and assessment activities, students in this course will explain job/site safety and precautions for job/site hazards; determine the uses of personal protective equipment (PPE); identify the safety equipment and procedures related to safe work practices and environment; identify fire prevention and protection techniques; explore Hazardous Communications (HazCom) including Material Safety Data Sheets (MSDS).

MTT 112 Print Reading (3)
Students will learn to identify basic lines, views and abbreviations used in blueprints, determine dimensions of features of simple parts, sketch simple parts with dimensional measurements, determine dimensions of multi-feather part, interpret GDT symbols, frame, and datums.

MTT 114 Machining I (3)
Student will learn to conduct job hazard analysis for conventional mills and lathes, develop math skill for machine tool operation, perform preventive maintenance and housekeeping on conventional mills and lathes, select work holding devices for mills, lathes and other machine tools, calculate feed and speeds, remove material using milling and turning processes, align milling head, use a vertical mill to center drill, drill and ream holes, change tools and tool holders on milling machines, and maintain saws and grinders.

MTT 116 Machine Tool Processes (1)
Students will learn to conduct a job hazard analysis for a machine tool group, analyze blueprints to layout parts and materials, select hand tools and common machine shop mechanical hardware for specific applications, prescribe cutting tools for assigned operations, calculate stock size to minimize drop, machine parts to specification outlined in machine handbooks, summarize preparations for machining operations, and apply precautions to minimize hazards for work with lathes, mills, drills, and grinders.

MTT 118 Lathe/Mill/Grind I (4)
Instruction will be given in the form of lectures, hand-outs, video tapes, shop demonstrations, shop assignment and text book assignments. Students will perform required set-ups and operations of lathes, milling machines, and grinders in a timely manner. Students are required to practice all shop safety rules. Calculate feed and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to the satisfaction of the instructor. Students may be required to work in two or three person teams, but all students will be given the opportunity to demonstrate their competency level and ability by means of written test, verbal communications, and demonstrating hands-on.

MTT 123 Machining II (3)
Students learn to perform basic trigonometric functions and perform other procedures such as I.D. boring and facing operations, planning a sequence for machining operations, aligning work pieces, use work holding devices, jigs and fixtures, performing threading operation on lathes, machining key ways on a vertical mill, inspection and dressing grinding wheels, performing O.D. and I.D. threading operations, performing O.D. and I.D. tapering operations, machining parts using milling cutters and milling machines.

MTT 131 Quality Control & Inspection (1)
Students are introduced to the science of dimensional metrology and its applications to ensure form and function of machined parts and assemblies using semi-precision and precision measuring instruments.

MTT 151 Workplace Ethics (2)
Students study human relations and professional development that exists in today's rapidly changing world so that they become better prepared for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement, and professional image skills.

MTT 210 Print Reading/Math III (1)
Student learn to perform basic trigonometric functions, and perform other procedures such as I.D. boring and facing operations, planning a sequence for machining operations, aligning work pieces, use work holding devices, jigs and fixtures, performing threading operations on lathes, machining keyways on a vertical mill, inspecting and dressing grinding wheels, performing O.D. & I.D. threading operations, performing O.D. & I.D. tapering operations, machining parts using milling cutters and milling machines, and tapping holes on a vertical mill.

MTT 218 Metallurgy (1)
Students learn the metallurgical terms and definitions in an effort to understand the behavior and service of metals in industry. Characteristics during heating, cooling, shaping, forming, and the stress related to their mechanical properties are covered, as well as the theory behind alloys, heat treatment processes and wear resistance.

MTT 219 Lathe/Mill/Grind III (6)
Instruction will be given in the form of lectures, hands-on video tapes, shop demonstrations, shop assignments, and text book assignments. Students will perform required set-ups and operations of lathes, milling machines, and grinders in a timely manner. Students are required to practice all shop safety rules. Calculate feed and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to satisfaction of the instruction. Student may be required to work in two or three person teams, but all students will be given the opportunity to demonstrate their competency level and ability by means of written tests, verbal communications, and demonstrating hands-on abilities.

MTT 221 Bench Work (1)
Students will be provided the opportunity to learn and practice bench work skills such as filing, drilling, tapping, deburring and layout for projects. They will gain valuable practical experience in the use of various hand tools by producing basic bench work projects. Topics will include safety, print reading, job planning, and quality control.

MTT 232 Bench/Saw/Drill (3)
Students will learn to conduct job hazard analysis for conventional mills and lathes, develop math skills for machine tool operations, perform preventive maintenance and housekeeping on conventional mills and lathes, select work holding devices for mills, lathes and other machine tools, calculate feeds and speeds, remove material using milling and turning processes, align milling head, use a vertical mill to center drill, drill and ream holes, change tools and tool holders on milling machines, and maintain saws and grinders.

MTT 238 Print Reading/Math IV (2)
Students learn to perform basic trigonometric functions, and perform other procedures such as I.D. boring and facing operations, planning a sequence for machining operations, aligning work pieces, use work holding devices, jigs and fixtures, performing threading operations on lathes, machining keyways on a vertical mill, inspecting and dressing grinding wheels, performing O.D. & I.D. threading operations, performing O.D. & I.D. tapering operations, machining parts using milling cutters and milling machines, and tapping holes on a vertical mill.

MTT 241 CNC Operations (3)
Students will become acquainted with the history of Numerical Control (NC) and Computer Numerical Control (CNC) machines and will be introduced to a CNC machine used in the precision machining trades. They will gain practical experience in the application of "G" codes and "M" codes, writing CNC machine programs, and machine setup and operation.

MTT 244 Lathe/Mill/Grind IV (6)
Instruction will be given in the form of lectures, hands-on video tapes, shop demonstrations, shop assignments, and text book assignments. Students will perform required set-ups and operations of lathes, milling machines, and grinders in a timely manner. Students are required to practice all shop safety rules. Calculate feed and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to satisfaction of the instruction. Student may be required to work in two or three person teams, but all students will be given the opportunity to demonstrate their competency level and ability by means of written tests, verbal communications, and demonstrating hands-on abilities.

MTT 250 Workplace Skills II (1)
This course is the final preparation for the exit assessment by using Key Train software for Applied Math, Reading for Information, and Locating Information. A student will be required to attend remaining seminars that were not attended in Workplace Skills I through the Career Resource Center.

MTT 251 CNC Lathe (3)
Introduces students to two axis computer numerical control lathes machining. The theory of operations is developed in the classroom and through interactive on line learning. Students then apply the knowledge in a cutting edge CNC laboratory. Topics include machine set up, coordinates terminology, cutter paths, angel cutting, and linear cutting.

MTT 252 Lathe/Mill/Grind II (3)
Students will perform required set-ups and operations of lathes, milling machines, and grinders in a timely manner. Students are required to practice all shop safety rules. Calculate feed and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to satisfaction of the instruction. Prerequisite: MTT118 Lathe/Mill/Grind I

MTT 255 CAD/CAM I (3)
A basic introductory course to Computer-aided Drafting and Computer-aided Manufacturing. Instruction will cover basic graphic construction and basic parts program for the CNC machine.

MTT 256 CNC Milling I (3)
Students will gain practical experience in setting up and performing basic operations on CNC Milling machines.

MTT 261 Machining III (3)
Course is a continuation of Machining II. Students learn to perform basic trigonometric functions and perform other procedures such as I.D. boring and facing operations, planning a sequence for machining operations, aligning work pieces, use work holding devices, jigs and fixtures, performing threading operation on lathes, machining key ways on a vertical mill, inspection and dressing grinding wheels, performing O.D. and I.D. threading operations, performing O.D. and I.D. tapering operations, machining parts using milling cutters and milling machines.

MTT 263 Machining IV (3)
Students are required to practice all shop safety rules. Calculate feed and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to satisfaction of the instruction. Student may be required to work in two or three person teams, but all students will be given the opportunity to demonstrate their competency level and ability by means of written tests, verbal communications, and demonstrating hands-on abilities. Prerequisites: Machining III

MTT 265 CAD/CAM II (3)
Students will gain practical experience in setting up and performing basic operations on CNC Milling machines. Prerequisites: CAD/CAM I

MTT 266 Print Reading II (3)
Students will learn to identify and implement lines, views and abbreviations used in blueprints, determine dimensions of features of simple parts, sketch advanced parts with dimensional measurements, determine dimensions of multi-feature parts, interpret common and advanced GDT symbols, frame, and datums and implement them in drawings and practice. Prerequisite: Print Reading I

MTT 267 Machine Tool Special Projects (3)
This course is designed to provide students with the opportunity to apply machining principles in various student projects.

MTT 270 Machine Tool Internship (3)
This internship course offers students opportunities to be employed or selected as an intern in their field with to expand their work experience related to their field of study.

NUS 250 Transition to Professional Nursing (1)
This hybrid course is designed to facilitate the transition from the practical nurse to the professional nurse role including legal, ethical, and regulatory standards. Students will review the role of the professional nurse and nursing concepts including scope of practice, nursing process, communication, collaboration and teamwork, clinical judgement, and evidenced based practice.

NUS 255 Health Assessment with Lab (2)
This course prepares students to perform a comprehensive and focused health assessment including past medical history, assessment skills, and identification and significance of normal and abnormal findings for patients throughout the lifespan. Skills include physiological, psychological, sociological, culture, and spiritual assessments of the patient as a whole person.

NUS 258 Pharmacology for the Professional Nurse (2)
This hybrid course is an introduction to the science of pharmacology. The focus will be on the actions, interactions, adverse effects, and nursing implications for each class of drugs presented. Students will explore the effects of pharmacological treatments on the body as they are used to treat musculoskeletal, integumentary, sensory, immunologic, infectious, and inflammatory disorders.

NUS 260 Adult Medical Surgical Nursing with Practicum (4)
This hybrid course prepares the professional nurse to provide safe, effective care for the adult client. The professional nurse will examine pathophysiology and nursing care of the most common medical/surgical disease processes and nursing care related to these medical/surgical disease processes including consideration of social determinants of health. The course will evaluate safe medication administration, nutritional principles, and legal and ethical issues related to the adult client in an acute health care setting. The clinical component will allow the student the opportunity to practice theoretical knowledge in a clinical setting.

NUS 265 Mental Health Nursing with Practicum (3)
This hybrid course prepares the professional nurse to provide safe, effective care for the client experiencing mental illness. Utilizing the principles of diversity, equity, and inclusion to establish a foundation for safe and effective care for all, the professional nurse will examine safe medication administration, nutritional principles, and legal and ethical issues related to the client with a mental health concern or substance use issue. The clinical component will allow the student the opportunity to practice theoretical knowledge in a clinical setting.

NUS 270 Maternal Child Nursing with Practicum (3)
This hybrid course prepares the professional nurse to provide safe, effective care for women, newborns, and children. Utilizing principles of diversity, equity, and inclusion to establish a foundation of safe and effective care for all, the professional nurse will examine safe medication administration, nutritional principles, and legal and ethical issues related to maternal/newborn and pediatric care. The clinical component will allow the student the opportunity to practice theoretical knowledge in a clinical setting.

NUS 280 High Risk Care of the Adult with Practicum (4)
This hybrid course requires the student to integrate concepts from all previous courses into the management of patients with acute and chronic complex or high-risk health alterations. Concepts include health promotion, disease prevention, health maintenance, and decision making for the emergent or critically ill patient within the nursing process, as well as management of family dynamics in those circumstances. The clinical component will allow the student the opportunity to practice theoretical knowledge in the clinical setting.

NUS 285 Leadership for the Professional Nurse (2)
This online course is designed to facilitate the transition of the nursing student into nursing practice. Concepts include issues that face the ADN prepared RN as a leader in the healthcare industry including issues facing the nursing profession today, the nurse role within the microsystem, delegation and collaboration, and patient safety and quality outcomes within a Highly Reliable Organization.

NUS 290 Capstone and NCLEX RN Review (3)
This course allows students to integrate all prior learning in the nursing program and apply those concepts and skills into practice during their final practicum experience and comprehensive review of the NCLEX-RN test plan. Practicum concepts are comprehensive and include coordination, delegation, and delivery of care. NCLEX-RN review concepts include all categories of Client Needs included in the NCLEX, as well as stress management, study skills, and test taking strategies.

PLU 100 Introduction to Plumbing Technology (2)
The course introduces the student to the basic knowledge of the plumbing occupation. Topics include professional opportunities in plumbing, plumbing safety, and tools of the trade. Prerequisites: NCCER Core certification

PLU 102 Plumbing Blueprint Reading (4)
Understanding blueprints and the math behind plumbing are essential skills required to advance in the Plumbing profession. This course will expose students to the concepts required to read plans, calculate pipe length, determine fitting allowances, lay out fixtures, and much more. Prerequisite: PLU 100 Introduction to Plumbing Technology

PLU 104 Plumbing Fixtures and Fittings (3)
Students will also be introduced to fixtures, faucets, drain assemblies and water supply systems. Students will study and practice safe installation applications of basic residential plumbing devices. Prerequisites: PLU100 Introduction to Plumbing Technology

PLU 105 Plumbing Electricity and Gas (3)
Plumbing systems use devices that contain electrical circuits. In this course, students will learn how to install and service plumbing electrical systems, understand how electrical components work, and learn how to read circuit diagrams and use electrical test equipment. Additionally, this course exposes students on the types of fuel systems and their instillation processes involved in the plumbing industry.

PLU 108 Plumbing Fixtures I (3)
This course introduces students to materials commonly used to make plumbing fixtures. It also exposes students to the Drain, Waste, and Vent system and the water distribution system. Prerequisite: PLU 100 Introduction to Plumbing

PLU 110 Plumbing Fixtures II (3)
This course provides instruction on installing drains and water distribution systems, identifying types and purposes of different fixtures and valves, installing water heaters, and an overview of electrical safety as it applies to the plumbing profession. Prerequisite: PLU 100 Introduction to Plumbing and PLU 108 Plumbing Fixtures I

PLU 201 Plumbing Internship (3)
Upon successful completion of this course, the student should be able to apply classroom knowledge to an actual work environment. The internship will provide the students with an on-the-job experience under the supervision of industry professionals. The work will be developed in cooperation with area employers, college staff and each student to provide a variety of actual job experiences directly related to the student's career goals in the plumbing field. Minimum 15 hrs. per week on-the-job training. Prerequisites: PLU 100 Introduction to Plumbing Technology

PLU 202 Plumbing Projects (3)
Work-based learning course connecting students to plumbing activities and projects within the context of the plumbing laboratory. Prerequisites: PLU 100 Introduction to Plumbing Technology

PNS 101 Foundations of Nursing (4)
This course utilizes the nursing standards of practice based on principles of biology, psychosocial, spiritual, and cultural to meet the needs of clients throughout the lifespan. Emphasis is placed on basic nursing skills, patient safety, and therapeutic communication. Concepts and skills are enhanced in subsequent courses.

PNS 115 Foundation of Nursing Clinical (2)
This course explores the art and science of nursing. In this clinical course emphasis is placed on the nursing process, cultural and spiritual awareness, communication, data collection, performance of basic nursing skills, and documentation. Principles of safe medication administration are introduced.

PNS 121 Strategies for Success (2)
This course is the first in a sequence of practical nursing courses and is designed as an introduction to the many facets of the college experience. Emphasis is placed on affecting student success including orientation to the academic arena, study skills, computer proficiency, skills procedures, and basic mathematic skills.

PNS 145 KSPN Fund of Pharm&Safe Med Ad (2)
This course provides an introduction to the principles of pharmacology. Emphasis is placed on nursing care related to the safe calculation and administration of medications to clients across the life span.

PNS 152 KSPN Nursing Care of Adults I (5)
This course focuses on the care of adult clients experiencing common medical/surgical health alterations with predictable outcomes. Emphasis is placed on the care of clients with alterations in cardiac output and tissue perfusion, oxygenation, regulation and metabolism, and integument. Principles of pre-and post-operative care and IV therapy are also addressed.

PNS 155 KSPN Nursing Care Ad I Clinic (2)
This course focuses on the care of adult clients with common medical/surgical health alterations. The clinical laboratory experience provides the student an opportunity to apply the theoretical concepts from Nursing Care of Adults I and implement safe client care in selected settings.

PNS 212 KSPN Nursing Care of Adults II (5)
This course focuses on the care of adult clients experiencing common medical/surgical health alterations with predictable outcomes. Emphasis is placed on the care of clients with alterations in cognition and sensation, mobility, elimination, immunity and hematology, and reproduction. Principles related to emergency preparedness are also addressed.

PNS 215 KSPN Nursing Care Ad II Clinic (3)
This course focuses on the care of adult clients with common medical/surgical health problems. The clinical laboratory experience provides the student an opportunity to build on the theoretical concepts from Nursing Care of Adults I and II and implement safe client care in selected settings. Students are given the opportunity to practice leadership skills while managing a caseload of clients.

PNS 221 Maternal Child Nursing (2)
This course focuses on pre-and post-natal maternal nursing care, as well as the care of children from infancy to adolescence. Emphasis is given to normal reproduction and frequently occurring biological, cultural, spiritual, and psychosocial needs of the child bearing and child rearing family.

PNS 226 Maternal Child Nrs Clinical (1)
This clinical course applies concepts from Maternal Child I. Emphasis is placed on the nursing process and meeting the basic needs of the maternal child client.

PNS 232 KSPN Care of Aging Adults (2)
This course is designed to explore issues related to the aging adults. Course content addresses the impact of ageism, alterations in physiological and psychosocial functioning, and the role of the practical nurse in caring for older adult clients across a continuum of care.

PNS 235 KSPN Mental Health Nursing (2)
This course explores basic concepts and trends in mental health nursing. Therapeutic modalities and client behavior management are discussed. Emphasis is placed on using the nursing process and meeting the basic human needs of the client with a mental health disorder.

PNS 242 KSPN Leadership,Roles & Issues (2)
This course provides orientation to leadership roles of the LPN and related responsibilities. It will introduce issues to the student they will encounter in the workplace.

PNS 245 NCLEX-PN (1)
This course is designed to provide a structured review of key content in the PN program. Test-taking strategies for NCLEX and requirements for NCLEX exam registration will be covered in this course. Review materials will be focused on foundations of nursing, care of the adult, mental health, pharmacology, maternal-child nursing, and leadership. The course will end with a comprehensive predictor to determine the student's readiness for the NCLEX exam.

SUR 101 Sterile Processing I (2)
The first course in sterile processing prepares students to work in a variety of career fields that require training in sterile processing, including the healthcare field. Students will received training and gain skills with decontamination, inspecting, assembling, disassembling, packaging and sterilizing reusable surgical instruments or other devices that are essential for patient or client and consumer safety.

SUR 102 Sterile Processing II (2)
The Second course in sterile processing continues to prepare students to work in a variety of career fields that require training in sterile processing, including the healthcare field. Students will continue developing skills with decontamination, inspecting, assembling, disassembling, packaging and sterilizing reusable surgical instruments or other devices that are essential for patient or client and consumer safety.

SUR 105 Introduction to Surgical Tech (4)
The course introduces the student to professional responsibilities, duties, and general functions of the operating room. It also introduces the student to the rest of the operating room team and their functions, responsibilities for safety of the patient and themselves, organization of the hospital and the operating room, legal and ethical issues, and the importance of communication in the operating room, credentialing, and professionalism. The use of electricity and lasers in the operating room are also covered as are the pre-op routines of the circulator prior to the patient entering the operating room.

SUR 111 Sterile Processing Clinical I (2)
The student will start to apply the basic skills they have learned for sterile processing in a clinical facility.

SUR 112 Sterile Processing Clinical II (5)
The student will continue to apply the basic skills they have learned for sterile processing in a clinical facility.

SUR 135 Principles & Practices of ST (5)
The course introduces the student to basic care practices of the operating room and will include aseptic technique and surgical case management. It covers a multitude of duties and concepts of both the scrub and circulating roles of the operating room. This also includes scrubbing, gowning, and gloving; preparing and maintaining the sterile field for surgery; methods of sterilization; all operating room (OR) equipment and its use, sponge, sharp, and instrument counts; specialty instruments and their care; surgical dressings; catheters, tubes and drains; pre-op, intra-op, and post-op duties of the surgical tech and circulating nurse like positioning prepping and draping and more.

SUR 145 Principles & Practices ST Lab (3)
The course allows the student to apply the knowledge that he/she learned in SUR140 (Principles and Practices). Repeated practice is designed to get the student ready for the clinical area to assure proper patient care. The student must pass the lab in order to continue in the program.

SUR 155 Surgical Procedures I (4)
The course instructs the student in the basic general, gynecological, and genitourinary surgical procedures. Besides the procedure itself the student will learn the instrumentation needed, pathology, sutures used, and special considerations.

SUR 180 ST Clinical I (4)
The student will start to apply the basic skills they have learned for the operating room in the actual operating room of a clinical facility. They will also pick up experience in the instrument room and pre-operative area of the hospital. Clinical proficiency at our facilities prepares the student with a minimum of 120 cases, 80 of which are in the first scrub role and comprise a variety of surgical scrub experiences.

SUR 208 CRCST Exam Review (1)
Comprehensive review of sterile processing technology concepts and practical preparation for the national certification examination including but not limited to: Cleaning, Decontamination, and disinfection, Preparation and packaging, Sterilization process, Patient care equipment, Sterile storage and inventory management, Documentation and record maintenance, and Customer relations.

SUR 245 Surgical Procedures II (5)
This course will expand ENT, maxillofacial, orthopedic, vascular, plastic surgery, and neuro surgical procedures. Besides the procedure itself, included in this course is pathology involved, surgical instruments needed, positioning of the patient, and special considerations for each surgical procedure.

SUR 250 Surgical Pharmacology (2)
This course begins with weights and measurements using the metric system and its application in the medical field. A review of basic math skills and figuring ratios is included. Medications used in the operating room during surgery both for the surgeon and the anesthesia provider will be discussed. Pre-operative and post-operative medications for anxiety, pain, emergencies, and other operating room (OR) related health issues will be discussed. Anesthetic agents used including IV, inhalation, regional, and local will be presented to the student.

SUR 266 Surgical Procedures III (4)
The course will introduce students to vascular, thoracic, plastic, ophthalmic, pediatric surgical procedures and trauma surgery. Included in this is pathology involved, surgical instruments needed, positioning the patient, and special considerations for each surgical procedure. Students will also learn basic physics and robotics as applied to the operating room.

SUR 274 Clinical II (8)
In the surgical suite students will apply knowledge and skills learned in Surgical Procedures II and Principles and Practices Lab to the operating room on all surgical procedures. This course is designed to increase the student's self-confidence as a surgical tech and allow them to become more aware of their sterile technique and preparedness for each surgical procedure. Anticipation of the surgeon is critical. Clinical proficiency at our facilities prepares the student with the required 120 surgical cases, 80 of those in the 'first scrub' role.

SUR 295 ST Certification Review (1)
Comprehensive review of surgical technology concepts and practical preparation for the national certification examination including but not limited to: a. Preoperative preparation of the surgical patient; b. Intra-operative procedures; c. Post-operative procedures; d. Administrative and personnel; e. Equipment sterilization and maintenance; f. Anatomy and physiology; g. Microbiology; and h. Surgical pharmacology.

TED 108 Introduction to Drafting (3)
Introduces the application of fundamental drawing types which includes geometric construction, ortho-graphic views, sections, auxiliary views, and development. Students are instructed in the care and use of the tools and equipment.

TED 115 Technical Math (3)
This course is a math review of practical skill as related to the drafting workplace where the students utilize fractions, decimals, simple equations, powers and roots, ratios and proportion, plane geometry, right triangles, oblique triangles, computation of areas and volumes, and use of charts and graphs. Additionally, Part II of this course students will utilize plane geometry, right triangles, oblique triangles, trigonometric natural and co- functions, solutions of triangles right and oblique, computation of areas and volumes, and use of charts and graphs.

TED 128 Computer Aided Drafting I (3)
First course in a three course sequence introducing AutoCAD software as a drafting tool. Instruction will be given in file handling, basic commands function, drafting techniques, presentation, and plotting. Architectural and mechanical applications will be used in lab exercises to demonstrate AutoCAD commands. Work will be completed with AutoCAD.

TED 135 Computer Aided Drafting II (3)
Second course in a three course sequence covering intermediate AutoCAD commands including attribute blocks, dimensioning, external references, object linking/embedding, and advanced drawing set-up, and user coordinate systems. Work will be completed with AutoCAD. Prerequisites: TED 128 Computer Aided Drafting I

TED 138 Machine Design (4)
This course is an introductory to fundamentals, theory, terminology, and practical construction methods in the machine disciplines. Use of actual working drawing used as reference to industry standards. Students will use a combination of drawing board and CAD in this segment. Practical skills refinement in methods, materials identification and labeling, and drafting techniques and standards used in various types of drawings used in for the machine industries are taught. Prerequisites: TED 108 Intro to Drafting; TED 128 Computer Aided Drafting I; TED 135 Computer Aided Drafting II; TED 145 Computer Aided Drafting III

TED 145 Computer Aided Drafting III (3)
Third course in a three-term sequence designed to reinforce and apply basic and advanced AutoCAD commands and techniques learned in CAD I and CAD II. This course focuses on providing in-depth practice to prepare students for AutoCAD certification. Work will be completed with AutoCAD, with an emphasis on mastery and certification readiness. Prerequisites: TED 135 Computer Aided Drafting II

TED 148 Industrial Design (4)
This course will be using the acquired knowledge from the Machine Design and CAD III courses to produce industrial design projects. Additionally, students will be learning the methods and standards used in various areas including: precision sheet metal design, part design, weldments, assemblies, & mechanisms. Prerequisites: TED 138 Machine Design

TED 208 Architectural Design I (3)
Students will learn tools and techniques used in industry to create a 3-story commercial building with Revit (3D parametric, BIM software). Featuring tools to make sections, elevations, schedules, design layouts, and details, students will wrap up their project by creating a set of construction documents. The modeling of Mechanical, Electrical, and Plumbing systems will also be introduced

TED 215 Architectural Design II (3)
This course provides students with an introduction to architectural engineering, emphasizing the integration of mechanical, electrical, and plumbing (MEP) systems within building design. Students will gain hands-on experience with industry-standard software tools, learning to design and analyze key MEP components such as HVAC systems, electrical layouts, and plumbing systems. The course will cover essential techniques for linking architectural models, coordinating interdisciplinary designs, and creating accurate construction documents.

TED 216 Architectural Design III (3)
Introducing the fundamental aspects of architectural drafting and focusing on residential house design, students will plan, design and model a residential house plan. Projects will include making a construction set of documents including: sections and elevations, schedules, design lay-outs, and details.

TED 217 Architectural Design IV (3)
This course focuses on advanced file management techniques for Building Information Modeling (BIM) using industry-standard software and cloud-based tools. Building on skills developed in Architectural Design I and II, students will enhance their proficiency in BIM workflows while preparing for the Revit Certification Exam.

TED 228 Civil Design I (3)
First course in a sequence introducing civil drafting applications using civil, mapping, and survey products. Drawings will be developed to include plats, related civil infra-structure, public utilities, contours, and roads utilizing AutoCAD.

TED 235 Civil Design II (3)
Second course in a sequence introducing students to the different types of software used in industry. Students will use software such as Civil 3D, ArcGIS, and others to create the same type of projects featured in the TED Civil I course.

TED 236 Civil Design III (3)
Building on the skills developed in Civil Drafting II, this course focuses on advanced techniques using industry-standard software. Students will learn to efficiently organize project data, work with survey points, create and analyze terrain surfaces, model road corridors, perform grading and volume calculations, and design pipe networks.

TED 238 Structural Design (3)
Introducing the fundamental aspects of structural design, students will learn the methods and standards used in industry. Students will be utilizing Tekla Structures (3D parametric, BIM software) for their projects. Students will also be able to apply this course to the Architectural and Civil design courses.

TED 245 Workplace Skills (3)
Upon successful completion of this course, the student should be able to identify the job skills necessary to have a successful career in the field of their choice. Topics included listening skills, oral communication, human relations, decision making/problem solving, how to work as a team, time and resource management, work ethics, career planning and resume building.

TED 248 Manufacturing Design (4)
Focusing on manufacturing materials and processes, CAD and CAM software, students will create projects using industry methods and standards. Utilizing 3D printing to simulate the design process, students will be able to make protypes of their projects and fix any design flaws before the completion of their projects. Prerequisites: TED 145 Computer Aided Drafting III

TED 255 Presentation&Special Projects (3)
During this course students will focus on creating advanced presentations, videos and simulations utilizing previously introduced software such as Inventor, Tekla structures, Revit, etc. Hololens and other technologies related to the industry will be introduced and implemented. Students will have the opportunity to fine tune their skills by working on special projects with a chosen area of focus within the industry.

TED 260 OJT/Internship (3)
Students that have completed all course objectives and criteria plus having an opportunity for employment related to the drafting field may utilize this internship course with instructor and administrative permission.

WEL 101A Welding Safety/OSHA 10 (1)
Through a variety of classroom and/or lab learning and assessment activities, students in this course will explain job/site safety and precautions for job/site hazards, determine the uses of personal protective equipment (PPE), identify the safety equipment and procedures related to safe work practices and environment, identify fire prevention and protection techniques, and explore Hazardous Communications (HazCom) including Material Safety Data Sheets (MSDS).

WEL 105 Welding Blueprint Reading (3)
This course focuses on reading, interpreting, and creating blueprints. Students will learn how to sketch out designs by hand and use them to create a print showing multiple views, measurement along with welding symbols, materials needed and their cost.

WEL 110A Print Reading/Math I (1)

WEL 120 Oxy-Fuel/Cutting Procedures (3)
This course will include cutting of ferrous and non-ferrous materials with manual, motor driven, and oxy-fuel shape cutting equipment. Also included are plasma-arc cutting (PAC) and carbon-arc cutting (CAC-A). Safety, equipment, and the basic fundamentals of cutting processes will be introduced. Student will be expected to produce acceptable oxy-fuel, PAC, and CAC-A cuts. This unit follows ANSI / AWS C4.2-90 an American National Standard.

WEL 131 Shielded Metal Arc Welding I (3)
Through classroom and/or lab/shop learning and assessment activities, students in this course will describe the shielded metal arc welding (SMAW) process, demonstrate the safe and correct set-up of the SMAW work station, associate SMAW electrode classifications with base metals and joint criteria, demonstrate proper electrode selection and use based on metal types and thicknesses, build pads of weld beads with selected electrodes in the flat position, build pads of weld beads with selected electrodes in the horizontal position, perform basic SMAW welds on selected weld joints, and perform visual inspection of welds.

WEL 131A SMAW (2)

WEL 135 Shielded Metal Arc Welding II (3)
This course is a continuation of SMAW. Additional positions, metals, and metal alloys will be introduced providing the student additional experience with Shielded Metal Arc Welding.

WEL 135A SMAW I (2)
This course is a continuation of SMAW. Additional positions, metals, and metal alloys will be introduced providing the student additional experience with Shielded Metal Arc Welding.

WEL 141 Gas Metal Arc Welding I (3)
Through classroom and/or lab/shop learning and assessment activities, students in this course will explain gas metal arc welding (GMAW) process, demonstrate the safe and correct set-up of the GMAW work station, correlate GMAW electrode classifications with base metals and joint criteria, demonstrate proper electrode selection and use based on metal types and thicknesses, building pads of weld beads with selected electrodes in the flat position, build pads of weld beads with selected electrodes in the horizontal position, produce basic GMAW welds on selected weld joints, and conduct visual inspection of GMAW welds.

WEL 141A GMAW (2)

WEL 145 Gas Metal Arc Welding II (3)
This course is a continuation of GMAW. Additional positions, metals, and metal alloys will be introduced providing the student additional experience with gas metal arc welding. Prerequisites: WEL 141 GMAW I

WEL 145A GMAW Welding (2)
The course is a continuation of GMAW. Additional positions and tests will be introduced providing the student additional experience with gas metal arc welding.

WEL 170 Welding Inspection & Qualifications (3)
This course focuses on understanding proper measurement tools and application along with using mathematics to determine exact locations of required additional items and penetrations associated to each Fabrication job. Using tape measure squares and other tools to layout reference lines and grids to meet specs and tolerances required.

WEL 180 Blueprint & Estimation (3)
This course focuses on reading, interpreting, and creating blueprints. Students will learn how to sketch out designs by hand and use them to create a print showing multiple views, measurement along with welding symbols, materials needed and their cost.

WEL 190 CNC Cutting & Brake Processes (3)
This course introduces Computer Numerical Control (CNC) and will be introduced to a CNC machine used in the precision cutting and bending applications. They will gain practical experience in the application of creating and using CNC programs, and machine setup and operation.

WEL 195 CAD Systems & Drafting (3)
This course introduces CAD software as a Layout and drafting tool. Instruction will be given in file handling, basic commands function, drafting techniques, programming, and plotting. Fabrication applications will be used in lab exercises to demonstrate CAD programs and commands. Work will be completed with CAD systems.

WEL 221 Flux Cored Arc Welding I (3)
The Flux Cored Arc Welding Unit (FCAW) is designed to teach the student the correct techniques to weld in flat and horizontal positions along with operational procedures. Practice and training in the welding shop will develop the basic skill level necessary to produce quality welds in flat and horizontal positions and different joint configurations.

WEL 227 Welding Metallurgy (3)
This course will enable the student to develop basic metallurgy skills with both ferrous and non-ferrous metals. The student will explore properties of metals, hardness testing, heat-treating, quenching, annealing, normalizing, tempering and surface hardening. Prerequisites: Completion of Certificate A courses

WEL 240 Gas Metal Arc Welding- Plate (3)
Course will follow requirements identified for SENSE Level II GMAW- Plate processes. Prerequisites: WEL 145 Gas Metal Arc Welding II

WEL 246 Gas Tungsten Arc Welding I (3)
Through classroom and/or lab/shop learning and assessment activities, students in this course will explain the gas tungsten arc welding (GTAW) process, demonstrate the safe and correct set-up of the GTAW work station, relate GTAW electrode and filler metal classifications with base metals and joint build pads of weld beads with selected electrodes and filler material in the flat position, build pads of weld beads with selected electrodes and filler material in the horizontal position, perform basic GTAW welds on selected weld joints, and perform visual inspection of GTAW welds. Prerequisites: WEL 131 Shielded Metal Arc Welding I

WEL 267 Gas Tungsten Arc Welding II (3)
This course is a continuation of WEL 246 GTAW I. Additional positions, metals, and metal alloys will be introduced providing the student additional experience with gas tungsten arc welding. Prerequisites: WEL 131 Shielded Metal Arc Welding I and WEL 246 Gas Metal Arc Welding I

WEL 270 Welding Fabrication (3)
This course focuses on identifying and using proper equipment and hand tools used for fixturing and fitting material along with fabricating materials to complete jobs. Students will learn how to use various clamps, guides, and squares along with other measuring tools and power tools from lay-out to completion.

WEL 280 Rigging Lifting & Handling (3)
This course focuses on determining the correct size and type of rigging equipment required to safely perform lifting operation. Proper Rigging Hardware Selections, Weight Calculations, and Handling procedures will be covered to show students how to properly transport and relocate heavy and uneven materials to perform layout task and complete jobs.

WEL 290 Fixturing Fit & Pre-Assembly (3)
This course focuses on fixturing materials into proper position along with securing materials to reduce warpage to meet location tolerances and welding codes. Students will learn how to tack materials in locations required to be ready for inspection so they can be approved for completion.

WEL 295 Welding Layout (3)
This course teaches the fundamentals in layout and fabrication related to the welding industry. Major emphasis on structural shapes and use in construction. Prerequisites: Cert A Level I courses.

WIT 001 Foundations for Student Success (0)
This three-day orientation course is designed to equip new students with the tools and knowledge needed for a successful transition into Washburn Tech. Students will receive guided support in accessing key systems such as email, D2L, and Navigate, while also becoming familiar with campus communication tools, parking policies, student support services, and academic expectations. Emphasis is placed on understanding the cultural shift from high school to college, fostering effective time management and study habits, and connecting with advisors and campus resources. By the end of the course, students will be prepared to navigate both their academic programs and Washburn Tech with confidence.