FLOYD COUNTY ATC

Program of Studies

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Course Descriptions Guide

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Automotive Maintenance and Light Repair Technician CIP 47.0604.01

This pathway prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. It includes instruction in brake systems, electrical systems, engine performance, engine repair, suspension and steering, automatic and manual transmissions and drive trains, and heating and air conditioning systems.

BEST PRACTICE COURSES

Complete (4) four credits from the following:

470507 Automotive Maintenance and Light Repair Section A

These courses introduce the student to the principles, theories, and concepts of Automotive Technology and include instruction in the maintenance and light repair of Engines, Brake Systems, Electrical/Electronic Systems, Suspension and Steering Systems, Automatic and Manual Transmission/Transaxles, and Engine Performance Systems. In all areas, appropriate theory, safety, and support instruction will be taught as required for performing each task, including proper care and cleaning of customers' vehicles. The instruction will also include the identification and use of appropriate tools and test/measurement equipment required to accomplish certain tasks. The student will also receive the necessary training to locate and use current reference and training materials from accepted industry publications and resources and demonstrate the ability to write work orders. Courses A, B, C, and D can be completed in any sequence. The current program standards/task list can be found on the **ASE Education Foundation website**.

470509 Automotive Maintenance and Light Repair Section B

These courses introduce the student to the principles, theories, and concepts of Automotive Technology and include instruction in the maintenance and light repair of Engines, Brake Systems, Electrical/Electronic Systems, Suspension and Steering Systems, Automatic and Manual Transmission/Transaxles, and Engine Performance Systems. In all areas, appropriate theory, safety, and support instruction will be taught as required for performing each task, including proper care and cleaning of customers' vehicles. The instruction will also include the identification and use of appropriate tools and test/measurement equipment required to accomplish certain tasks. The student will also receive the necessary training to locate and use current reference and training materials from accepted industry publications and resources and demonstrate the ability to write work orders. Courses A, B, C, and D can be completed in any sequence. The current program standards/task list can be found on the **ASE Education Foundation website**.

470511 Automotive Maintenance and Light Repair Section C

These courses introduce the student to the principles, theories, and concepts of Automotive Technology and include instruction in the maintenance and light repair of Engines, Brake Systems, Electrical/Electronic Systems, Suspension and Steering Systems, Automatic and Manual Transmission/Transaxles, and Engine Performance Systems. In all areas, appropriate theory, safety, and support instruction will be taught as required for performing each task, including proper care and cleaning of customers' vehicles. The instruction will also include the identification and use of appropriate tools and test/measurement equipment required to accomplish certain tasks. The student will also receive the necessary training to locate and use current reference and training materials from accepted industry publications and resources and demonstrate the ability to write work orders. Courses A, B, C, and D can be completed in any sequence. The current program standards/task list can be found on the **ASE Education Foundation website**.

470513 Automotive Maintenance and Light Repair Section D

These courses introduce the student to the principles, theories, and concepts of Automotive Technology and include instruction in the maintenance and light repair of Engines, Brake Systems, Electrical/Electronic Systems, Suspension and Steering Systems, Automatic and Manual Transmission/Transaxles, and Engine Performance Systems. In all areas,

appropriate theory, safety, and support instruction will be taught as required for performing each task, including proper care and cleaning of customers' vehicles. The instruction will also include the identification and use of appropriate tools and test/measurement equipment required to accomplish certain tasks. The student will also receive the necessary training to locate and use current reference and training materials from accepted industry publications and resources and demonstrate the ability to write work orders. Courses A, B, C, and D can be completed in any sequence. The current program standards/task list can be found on the **ASE Education Foundation website**.

470501 Co-op* I (Auto)

Co-op provides supervised on-the-job work experience related to the student's educational objectives. Students who participate in the Cooperative Education program receive compensation for their work.

Automobile Service Technology CIP 47.0604.02

This pathway prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. It includes instruction in brake systems, electrical systems, engine performance, engine repair, suspension and steering, automatic and manual transmissions and drive trains, and heating and air conditioning systems.

BEST PRACTICE COURSES

Complete (4) four credits from the following:

470515 Automobile Service Technology Section A

These courses present the theory, component identification, operation, diagnosis, and service and repair of engines, brake systems, electrical/electronic systems, suspension, steering systems, automatic and manual transmissions/transaxles, and engine performance systems. In all areas, appropriate theory, safety, and support instruction will be taught as required for performing each task. The instruction will also include the identification and use of appropriate tools and testing/measurement equipment required to accomplish certain tasks. The student will also locate and use current reference and training materials from accepted industry publications and resources and write industry standard work orders. Courses A, B, C, and D can be completed in any sequence. The current program standards/task list can be found on the ASE Education Foundation website.

470517 Automobile Service Technology Section B

These courses present the theory, component identification, operation, diagnosis, and service and repair of engines, brake systems, electrical/electronic systems, suspension, steering systems, automatic and manual transmissions/transaxles, and engine performance systems. In all areas, appropriate theory, safety, and support instruction will be taught as required for performing each task. The instruction will also include the identification and use of appropriate tools and testing/measurement equipment required to accomplish certain tasks. The student will also locate and use current reference and training materials from accepted industry publications and resources and write industry standard work orders. Courses A, B, C, and D can be completed in any sequence. The current program standards/task list can be found on the ASE Education Foundation website.

470519 Automobile Service Technology Section C

These courses present the theory, component identification, operation, diagnosis, and service and repair of engines, brake systems, electrical/electronic systems, suspension, steering systems, automatic and manual transmissions/transaxles, and engine performance systems. In all areas, appropriate theory, safety, and support instruction will be taught as required for performing each task. The instruction will also include the identification and use of appropriate tools and testing/measurement equipment required to accomplish certain tasks. The student will also locate and use current reference and training materials from accepted industry publications and resources and write industry standard work orders. Courses A, B, C, and D can be completed in any sequence. The current program standards/task list can be found on the ASE Education Foundation website.

470521 Automobile Service Technology Section D

These courses present the theory, component identification, operation, diagnosis, and service and repair of engines, brake systems, electrical/electronic systems, suspension, steering systems, automatic and manual transmissions/transaxles, and engine performance systems. In all areas, appropriate theory, safety, and support instruction will be taught as required for performing each task. The instruction will also include the identification and use of appropriate tools and testing/measurement equipment required to accomplish certain tasks. The student will also locate and use current reference and training materials from accepted industry publications and resources and write industry standard work orders. Courses A, B, C, and D can be completed in any sequence. The current program standards/task list can be found on the ASE Education Foundation website.

470501 Co-op* I (Auto)

Co-op provides supervised on-the-job work experience related to the student's educational objectives. Students who participate in the Cooperative Education program receive compensation for their work.

Residential Carpenter Assistant CIP 46.0201.02

This pathway prepares individuals to apply technical knowledge and skills to layout, cut, fabricate, erect, install, and repair wooden structures and fixtures using hand and power tools. The pathway includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

BEST PRACTICE COURSES

Complete (4) four credits:

Introduction to Construction Technology 460201

This course is an introduction to the construction carpentry industry. The class will emphasize safe and proper methods of operating hand tools, portable power tools, and stationary power tools in the construction industry. Content in the course should be aligned with the pathway being offered: Commercial and/or Residential.

Floor and Wall Framing 460212

The students will practice floor framing, layout, and construction of floor frames. Cutting and installing floor and wall framing members according to plans and specifications will also be practiced. Content in the course should be aligned with the pathway being offered:

460213 Ceiling and Roof Framing

This course covers roof types and combinations of roof types used in the construction industry. The emphasis of this course is on layout. Cutting and installing ceiling joists, rafters, roof sheathing, and roof coverings for both commercial and residential construction. Content in the course should be aligned with the pathway being offered-- Commercial and/or Residential.

460219 Exterior and Interior Finish (1 credit)

This course presents basic concepts of building trim, gypsum wallboard, paneling, base, ceiling and wall molding with instruction on acoustic ceilings and insulation, wood floors, tiles, inlaid adhesive and tools of the flooring trade. This course will continue to refine the techniques and skills taught in the previous carpentry courses. In this course, cost control, speed, and precision are emphasized. In addition, students will demonstrate the skills associated with the exterior finishing of a house.

460217 Construction Prints

This course will provide a series of lectures, demonstrations, and practice exercises in the study of symbols, views, sections, details, and material lists found on architectural working drawings, building materials and specifications lists, and construction dimensioning systems and charts/schedules.

499930 Industrial Safety

This course provides practical training in industrial safety. The students are taught to observe general safety rules and regulations, to apply worksite and shop safety rules, and to apply OSHA (Occupational Safety and Health Administration) regulations. Students are expected to obtain certification in first aid and cardiopulmonary resuscitation.

460242 Co-op* (Carpentry)

Co-op provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Co-op Education program receive compensation for their work.

Environmental Control System Technician CIP 47.0201.05

This pathway prepares individuals to apply technical knowledge and skills to repair, install, service and maintain the operating condition of heating, air conditioning, and refrigeration systems. The pathway includes instruction in diagnostic techniques, the use of testing equipment and the principles of mechanics, electricity, and electronics related to the repair of heating, air conditioning and refrigeration systems.

BEST PRACTICE COURSES

Complete (4) four credits:

460828 Refrigeration Fundamentals

This course introduces the fundamentals of refrigeration, refrigeration terms, and the basic refrigeration cycle. Proper use of tools, test equipment, and materials is stressed. Environmental issues, including refrigerant handling, are discussed. Refrigerant piping and methods used to join them are taught. General and specific safety is emphasized.

460817 HVAC Electricity

This course introduces students to the basic physics of electricity. Students apply Ohm's Law, measure resistance, voltage, ohms, watts and amps; construct various types of electrical circuits, select wire and fuse sizes; and learn to troubleshoot an electric motor and motor controls.

460826 Electrical Components

This course defines the electrical components of an air conditioning system. Different types of line voltages, wiring diagrams, and solid-state devices are included. Safety is emphasized.

460820 Heating and Humidification

This course explains heating systems from simple fossil fuel furnaces through more complex systems. This course will also concentrate on the line and control voltage circuitry pertaining to these systems. ARI Controls; Subtopics A-C; Heating Systems: Subtopics AC; System Installation and Start-Up: Subtopics A and B; System Servicing and Troubleshooting: Subtopic C; Tools and Equipment: Subtopic D

460880 Air Conditioning Co-op*

Co-op I provides supervised, on-the-job work experience related to the student's educational objectives. Students participating in the Cooperative Education program receive compensation for their work.

Completing the above four (4) courses will allow the student to take the "Kentucky Journeyman HVAC Mechanic" exam. After successfully completing the exam, the student will attain 750 of the 3000 hours of "On the Job Training" (OJT) required by regulation 815 KAR 8:030 Section 3.

Industrial Electrician Assistant CIP 46.0302.02

This pathway prepares individuals to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems in residential, commercial, and industrial electric power wiring, DC and AC motor controls, and electrical distribution panels. The pathway includes instruction in the principles of electronics and electrical systems, wiring, power transmission, safety, industrial and household appliances, job estimation, electrical inspecting and inspection, and applicable codes and standards. Instruction includes the principles of electronics and electrical systems, wiring, power transmission, safety industrial and household appliances, job estimation, electrical testing and inspection, and applicable codes and standards.

BEST PRACTICE COURSES

Complete (4) four credits:

460312 Electrical Construction I

This course involves the study of materials and procedures used in construction wiring.

460316 Circuits I

This course provides an introduction to the basic theory of DC and AC circuits, including circuit analysis techniques, introductory magnetism, and transformer principles

460331 Electrical Motor Controls

This course addresses the diversity of control devices and applications used in industry today. Safety and electrical lockouts are also included.

460325 Rotating Machinery

This course focuses on the construction, operation and maintenance of DC motors and generators and AC motors and alternators. This course addresses the diversity of control devices and applications used in industry today. Safety and electrical lockouts are also included.

460331 Motor Controls

This course addresses the diversity of control devices and applications used in industry today. Safety and electrical lockouts are also included.

460323 Rotating Machinery

This course focuses on the underlying principles of rotating electrical equipment including DC and AC motors and generating equipment construction, operating applications, and the maintenance of DC and AC motors and generating equipment.

460345 Co-op* (Electrical)

Co-op I (Electrical) provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Cooperative Education program receive compensation for their work.

Allied Health CIP 51.0000.01

This pathway is a general, introductory, undifferentiated, or joint pathway in health services occupations that prepares individuals for either entry into specialized training programs or various concentrations in the allied health area. Includes instruction in the basic sciences, research and clinical procedures, and aspects of the subject matter related to various health occupations.

BEST PRACTICE COURSES

Choose (3) three credits:

170111 Principles of Health Science

Principles of Health Science is an orientation and foundation for occupations and functions in any health care profession. The course includes broad health care core standards that specify the knowledge and skills needed by the vast majority of health care workers. The course focuses on exploring health career options, history of health care, ethical and legal responsibilities, leadership development, safety concepts, health care systems and processes, and basic health care industry skills. This introductory course may be a prerequisite for additional courses in the Health Science program.

170141 Emergency Procedures

This course will focus on potential emergency situations. It is designed to promote an understanding of standard precautions necessary for personal and professional health maintenance and infection control. Upon successful completion of the course, the student will demonstrate the necessary skills in First Aid and Cardiopulmonary Resuscitation (CPR) and will be given the opportunity to take the complete examination as outlined by the sponsoring agency.

170131 Medical Terminology

Medical Terminology is designed to develop a working knowledge of language in all health science major areas. Students acquire word-building skills by learning prefixes, suffixes, roots and abbreviations. Students will learn correct pronunciation, spelling, and application rules. By relating terms to body systems, students identify proper use of words in a medical environment. Knowledge of medical terminology enhances the student's ability to successfully secure employment or pursue advanced education in health care.

170501 Allied Health Core Skills

Allied Health Core Skills is designed to provide knowledge, concepts and psychomotor skills necessary for gainful employment as an entry-level health care worker. Assisting students in selecting a career major, classroom instruction and educational objectives are combined with learning experiences, observations, and a work-based learning opportunity such as internship, shadowing, or clinical rotation. This course is designed for students not enrolled in the Medicaid Nurse Aide program or the Patient Care Technician program.

Choose (1) one credit from the following:

170167 Body Structures and Functions

Body Structures and Functions is designed to provide knowledge of the structure and function of the human body with an emphasis on normalcy. The interactions of all body systems in maintaining homeostasis will promote an understanding of the basic human needs necessary for health maintenance. Academic knowledge from life science core content as it relates to the human body will be included. Laboratory activities should be a part of the course when appropriate.

170169 Medical Math

This course is designed for students who have completed courses containing all the required high school Kentucky Academic Standards (KAS) for Mathematics. If students have not completed courses containing all the required KAS for Mathematics, a Medical Math course should attend to standards students still need. This course is designed to focus, utilize and build on mathematical skills commonly used in all health

occupations. Students will use applied techniques, problem-solving and critical thinking to perform mathematical operations such as computations, ratio and proportion, weights and measurements and conversions, beyond what was addressed in the student's foundational courses. A Medical Math course may include, but is not limited to, topics found in the (+) standards of the KAS for Mathematics. This course is strongly recommended for all Health Science majors. Successful completion of Algebra I is suggested prior to enrolling in this course. Leadership development will be provided through the HOSA student organization.

170503 Co-op* (Allied Health)

Cooperative Education provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Cooperative Education program receive compensation for their work. Work-based learning is designed to complement classroom instruction. Students will be required to follow program and agency requirements for attendance and health screening. These may include but are not limited to drug screens, TB (tuberculin) skin tests, and immunization certificates.

170550 Internship: Allied Health

The internship provides supervised on-the-job work experience related to the students' education objectives. Work-based learning is designed to complement classroom instruction. Students will be required to follow program and agency requirements for attendance and health screenings. These may include but are not limited to drug screens, TB (tuberculin) skin tests, and immunization certificates.

Pre-Nursing CIP 51.2699.01

This pathway prepares individuals for admission to a professional program in nursing. This pathway focuses on caring for residents in a long-term care facility.

BEST PRACTICE COURSES

Complete (3) three credits:

170111 Principles of Health Science

Principles of Health Science is an orientation and foundation for occupations and functions in any health care profession. The course includes broad health care core standards that specify the knowledge and skills needed by the vast majority of health care workers. The course focuses on exploring health career options, history of health care, ethical and legal responsibilities, leadership development, safety concepts, health care systems and processes, and basic health care industry skills. This introductory course may be a prerequisite for additional courses in the Health Science program.

170141 Emergency Procedures

This course will focus on potential emergency situations. It is designed to promote an understanding of standard precautions necessary for personal and professional health maintenance and infection control. Upon successful completion of the course, the student will demonstrate the necessary skills in First Aid and

Cardiopulmonary Resuscitation (CPR) and will be given the opportunity to take the complete examination as outlined by the sponsoring agency.

170131 Medical Terminology

Medical Terminology is designed to develop a working knowledge of language in all health science major areas. Students acquire word-building skills by learning prefixes, suffixes, roots and abbreviations. Students will learn correct pronunciation, spelling, and application rules. By relating terms to body systems, students identify proper use of words in a medical environment. Knowledge of medical terminology enhances the student's ability to successfully secure employment or pursue advanced education in health care.

170631 Medicaid Nurse Aide

This course is an instructional program that prepares individuals to perform routine nursing-related services to patients in long-term care facilities under the training and supervision of an approved registered nurse. State Registry is available upon successful completion of state written and performance examination. Prior to offering this course, the instructor and health science program must be approved for meeting state requirements set by the Cabinet for Health and Family Services.

Choose (1) one credit from the following:

170167 Body Structures and Functions

Body Structures and Functions is designed to provide knowledge of the structure and function of the human body with an emphasis on normalcy. The interactions of all body systems in maintaining homeostasis will promote an understanding of the basic human needs necessary for health maintenance. Academic knowledge from life science core content as it relates to the human body will be included. Laboratory activities should be a part of the course when appropriate.

170169 Medical Math

This course is designed for students who have completed courses containing all the required high school Kentucky Academic Standards (KAS) for Mathematics. If students have not completed courses containing all the required KAS for Mathematics, a Medical Math course should attend to standards students still need. This course is designed to focus, utilize and build on mathematical skills commonly used in all health occupations. Students will use applied techniques, problem-solving and critical thinking to perform mathematical operations such as computations, ratio and proportion, weights and measurements and conversions, beyond what was addressed in the student's foundational courses. A Medical Math course may include, but is not limited to, topics found in the (+) standards of the KAS for Mathematics. This course is strongly recommended for all Health Science majors. Successful completion of Algebra I is suggested prior to enrolling in this course. Leadership development will be provided through the HOSA student organization.

170601 Co-op* (Nursing)

Cooperative Education provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Cooperative Education program receive compensation for their work.

Work-based learning is designed to complement classroom instruction. Students will be required to follow program and agency requirements for attendance and health screening. These may include but are not limited to drug screens, TB (tuberculin) skin tests, and immunization certificates.

170603 Internship: Pre-Nursing

The internship provides supervised on-the-job work experience related to the students' education objectives. Work-based learning is designed to complement classroom instruction. Students will be required to follow program and agency requirements for attendance and health screenings. These may include but are not limited to drug screens, TB (tuberculin) skin tests, and immunization certificates. This course may be repeated to accommodate multiple experiences in a variety of health care settings. *Prerequisites: Principles of Health Science 170111 AND Medical Terminology 170131 AND Emergency Procedures 170141*

Network Security CIP 11.1003.00

The Network Security pathway will help students be able to properly design and install a wired LAN, including all network devices, physically connect servers and desktop computers, properly design and install a wireless LAN, including all network devices, and make physical LAN connections for servers and desktop computers, integrate the Wireless LAN with wired LAN and work within the ethical and professional parameters in the Computer Networking profession. Students will be team members, learn new network administration support skills and upgrade existing computer information system skills.

BEST PRACTICE COURSES

Choose (4) four credits from the following:

110110 Computer Literacy

This course provides an introduction to the computer and the convergence of technology as used in today's global environment. Introduces topics including computer hardware and software, file management, the Internet, e-mail, social web, green computing, AR and VR, security, and AI fundamentals. Instructions present the basic use of application, programming, systems, and utility software. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

110101 Computer Hardware or Software Maintenance

This course presents a practical view of computer hardware and client operating systems. It also covers computer hardware components; troubleshooting, repair, and maintenance; operating system interfaces and management tools; networking components; computer security; and operating procedures. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

110901 Introduction to Networking Concepts (non-vendor)

This course introduces technical-level concepts of non-vendor-specific networking including technologies, media, topologies, devices, management tools, and security. Provides the basics of how to manage, maintain, troubleshoot, install, operate, and configure basic network infrastructure. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K- 12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

110912 Security Fundamentals

Security Fundamentals introduces basic computer and network security concepts and methodologies. Covers principles of security; compliance and operational security; threats and vulnerabilities; network security; application, data, and host security; access control and identity management; and cryptography. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

110230 Cybersecurity

Cybersecurity introduces the tools and concepts of cybersecurity and encourages students to create solutions that allow people to share computing resources while protecting privacy. This course raises students' knowledge of and commitment to ethical computing behavior. Students will learn the components of cybersecurity and the role each plays in preventing, detecting, and mitigating vulnerabilities and attacks. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

110918 Computer Science Co-op*

Cooperative Education for CTE courses provides supervised worksite experience related to the student's identified career pathway. A student must be enrolled in an approved course during the same school year that the co-op experience is completed. Students who participate receive a salary for these experiences, in accordance with local, state and federal minimum wage requirements according to the **Work-Based Learning Manual**. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.)

110919 Computer Science Internship

Internship for CTE courses provides supervised worksite experience for high school students who are enrolled in a course associated with their identified career pathway. Internship experiences consist of a combination of classroom instruction and field experiences. A student receiving pay for an intern experience is one who is participating in an experience that lasts a semester or longer and has an established employee- employer relationship. A non-paid internship affects those students who participate on a short-term basis (semester or less). All information references to the **Work-Based Learning Manual**. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.)

Welder-Entry Level CIP 48.0508.01

An entry-level welder demonstrates the ability to assist lead welders in fabricating steel and metal structures. Students must perform essential welding functions, calculate dimensions, and operate power equipment, grinders, and other tools. Students must be proficient in reading and interpreting basic blueprints and following work procedure specifications (WPS).

BEST PRACTICE COURSES

Choose (4) four credits from the following:

480505 Blueprint Reading for Welding

This course provides a study of occupationally specific prints for welders. Advanced study of multi-view drawings, assembly drawings, datum dimensions, numerical control drawings, sheet metal prints, castings and forgings, instrumentation and control charts, diagrams, working drawings, geometric dimensioning, tolerance, and use of reference materials and books are included. Occupational specifics including welding drawings, symbols, joint types, grooves, pipe welding symbols, testing symbols, and specification interpretations are stressed.

480523 Oxy-fuel Systems

This course provides a working knowledge of oxy-fuel identification, set up, inspection, and maintenance; consumable identification, selection and care; principles of operation; and effects of variables for manual and mechanized oxy-fuel cutting, welding, brazing principles and practice, and metallurgy. Shop safety and equipment use are also covered.

480501 Cutting Processes and Lab

Students will obtain a working knowledge of various cutting processes used by the welding industry. Skills will include but are not limited to safety; theory of operation; setup and operating techniques; troubleshooting; making minor equipment repairs; terms and definitions; identification; evaluation; and repair and prevention of discontinuities of cut surfaces. Also included are oxyfuel cutting, plasma arc cutting, exothermic cutting, air carbon arc cutting, shielded metal arc cutting, and mechanical cutting processes.

480521 Shielded Metal Arc Welding (SMAW) and Lab

Students learn the identification, inspection, and maintenance of SMAW electrodes; principles of SMAW; the effects of variables on the SMAW process to weld plate and pipe; and metallurgy.

480522 Gas Metal Arc Welding and Lab

This course covers identification, inspection, and maintenance of GMAW machines; identification, selection and storage of GMAW electrodes; principles of GMAW; and the effects of variables on the GMAW process. Theory and applications of related processes such as FCAW, SMAW, and metallurgy are also included. Students learn the practical application and manipulative skills of Gas Metal Arc Welding and the proper safety situations needed in this process. Both ferrous and non-ferrous metals will be covered, as well as various joint designs on plates in all positions.

480535 SMAW Open Groove Lab

This course offers the student the opportunity to advance skills in the practical aspects of vee- butt plate welding using SMAW.

480541 Co-op* I (Welding)

Co-op provides supervised on-the-job work experience related to educational objectives. Students participating in the Cooperative Education program receive compensation for their work. This course can be repeated.

480544 Internship (Welding)

The internship provides supervised on-the-job work experience related to the students' education objectives. Students participating in the practicum do not receive compensation.