

**SPECIAL POPULATIONS**

**ADULT LITERACY (ADL)**

**ADL 020 MATH I (3T) 3 credits**  
Beginning Math: teaches Whole numbers, Addition, Subtraction, Multiplication and Division. All instructions and materials are at Pre-GED levels. Materials are geared toward self-pacing with tutorial assistance.

**ADL 021 MATH II (3T) 3 credits**  
Primary focus is decimals, with continuing attention to Whole Number problems. All instructions and materials are at Pre-GED levels. Materials are geared toward self-pacing with tutorial assistance.

**ADL 022 MATH III (3T) 3 credits**  
Primary focus is on computation of fractions. All instructions and materials are at Pre-GED levels. Materials are geared toward self-pacing with tutorial assistance.

**ADL 023 MATH IV (3T) 3 credits**  
Primary focus is on understanding word problems, with continuing review of previous math criteria. All instructions and materials are at Pre-GED levels. Materials are geared toward self-pacing with tutorial assistance.

**ADL 024 MATH V (3T) 3 credits**  
Primary focus is on Percent Problems. All instructions and materials are at Pre-GED levels. Materials are geared toward self-pacing with tutorial assistance.

**ADL 025 MATH VI (3T) 3 credits**  
Primary focus is on Ratio & Proportion/Measurement. All instructions and materials are at Pre-GED levels. Materials are geared toward self-pacing with tutorial assistance.

**ADL 026 MATH VII (3T) 3 credits**  
Primary focus is on Algebra with continuing attention to appropriate Word Problems. All instructions and materials are at Pre-GED levels. Materials are geared toward self-pacing with tutorial assistance.

**ADL 027 MATH VIII (3T) 3 credits**  
Primary focus is on Geometry at the Pre-GED level with post-testing on all previous Math disciplines. All instructions and materials are at Pre-GED levels. Materials are geared toward self-pacing with tutorial assistance.

**ADL 040 LEARNING ABOUT CAREERS (3T) 3 credits**  
This course introduces students to the many career opportunities that exist in the world of work. Topics include the nature of work, specific job requirements, and the impact of interest and aptitude on successful employment. Upon completion, each student will be able to summarize aspects of working, including job requirements specific to various fields and the impact of one's aptitude and interest. (Job search techniques will be included in this course.)

**ADL 053 UNDERSTANDING CONDENSED DATA (3T) 3 credits**  
This course presents a variety of charts, graphs, and tables for interpretation. Topics include work and transportation schedules, line and bar graphs, pie charts, and tables of contents. Upon completion, students should be able to use condensed data to enhance vocational skills.

**ADL 055 ESSENTIALS OF A GOOD CITIZEN (3T) 3 credits**  
This course presents concepts from history, law, and government. Topics include citizens' responsibilities and privileges in a market-driven society. Upon completion, students should be able to describe the opportunities and constraints facing citizens in a democracy.

**ADL 056 BASIC WRITING (3T) 3 credits**  
This course is designed to meet the needs of students with writing deficiencies. Topics may include instruction in grammar, usage, mechanics, sentence structure, and paragraph development. Upon completion, using rules of grammar, students should be able to write paragraphs that start with a topic sentence and develop that topic with three or four complete sentences.

**ADL 057 INTERMEDIATE WRITING (3T) 3 credits**  
This course is designed to meet the needs of students with moderate writing deficiencies. Topics include grammar, usage, mechanics, sentence structure, transitional tools, and paragraph development. Upon completion, students should be able to write a composition of three or more paragraphs developing a topic related to a technical occupation.

**ADL 058 BASIC MATHEMATICS (3T) 3 credits**  
This developmental course constitutes a review of arithmetical principles and computations designed to help the student develop the mathematical proficiency necessary for selected curriculum entrance.

**ADL 059 DEVELOPMENTAL ALGEBRA (3T) 3 credits**  
This developmental course is a review of algebra, designed to help the student develop the mathematical proficiency for selected curriculum entrance.

**ADL 060 BASIC GEOMETRY (3T) 3 credits**  
**PREREQUISITE: ADL 059 or Permission of instructor**  
This course is designed for those who have no previous experience in geometry or who need preparatory work in this area. Topics include fundamental concepts of geometry such as: points, lines, planes, angles, circles, polygons, axioms, theorems, ratio and proportion, and measurement of lengths and areas.

**ADL 061 DEVELOPMENTAL READING I (3T) 3 credits**  
This developmental course is designed to assist students whose placement test scores indicate serious difficulty with decoding skills, comprehension, vocabulary, and study skills.

**ADL 062 DEVELOPMENTAL READING II**  
(3T) **3 credits**  
**PREREQUISITE: ADL 061 or Permission of instructor**  
This developmental course is designed to assist students whose placement test scores indicate serious difficulty with decoding skills, comprehension, vocabulary, and study skills.

**ADL 063 DEVELOPMENTAL READING III**  
(3T) **3 credits**  
**PREREQUISITE: ADL 062 or Permission of instructor**  
This developmental course is designed to assist students whose placement test scores indicate serious difficulty with decoding skills, comprehension, vocabulary, and study skills.

**AUTOMOTIVE BODY REPAIR (ABR)**

**ABR 111 NON-STRUCTURAL REPAIR**  
(1T, 2E, 3M) **3 credits**  
**PREREQUISITIES: As required by college**  
Students are introduced to basic principles of non-structural panel repairs. Topics include shop safety, identification and use of hand/power tools, panel preparation, sheet metal repairs, and materials. This is a CORE course. This course supports CIP code 47.0603.

**ABR 114 NON-STRUCTURAL PANEL REPLACEMENT**  
(1T, 2E, 3M) **3credits**  
**PREREQUISITIES: As required by college**  
Students are introduced to the principles of non-structural panel replacement. Topics include replacement and alignment of bolt on panels, full and partial panel replacement procedures, and attachment methods. This is a CORE course. This course supports CIP code 47.0603.

**ABR 122 SURFACE PREPARATION**  
(1T, 2E, 3M) **3 credits**  
**PREREQUISITIES: As required by college**  
This course introduces students to methods of surface preparation for vehicular refinishing. Topics include sanding techniques, metal treatment, selection of undercoats, and proper masking procedures. This is a CORE course. This course supports CIP code 47.0603.

**ABR 123 PAINT PREPARATION AND EQUIPMENT**  
(1T, 2E, 3M) **3 credits**  
**PREREQUISITIES: As required by college**  
This course introduces students to methods of paint application and equipment used for vehicular refinishing. Topics include spray gun and related equipment use, paint mixing, matching, and applying the final topcoat. This is a CORE course. This course supports CIP code 47.0603.

**ABR 151 SAFETY AND ENVIRONMENTAL PRACTICES**  
(1T, 2E, 3M) **3 credits**  
**PREREQUISITIES: As required by college**  
This course is designed to instruct the student in safe work practices. Topics includes OSHA requirement, the right to know laws, and EPA regulations, as well as state and local laws. This is a CORE course. This course supports CIP code 47.0603.

**ABR 154 AUTOMOTIVE GLASS AND TRIM**  
(1T, 2E, 3M) **3 credits**  
**PREREQUISITIES: As required by college**  
This course is a study of automotive glass and trim. Emphasis is placed on removal and replacement of structural and nonstructural glass and automotive trim. Upon completion, students should be able to remove and replace automotive trim and glass. This is a CORE course. This course supports CIP code 47.0603.

**ABR 156 AUTOMOTIVE CUTTING AND WELDING**  
(1T, 2E, 3M) **3 credits**  
**PREREQUISITIES: As required by college**  
Students are introduced to the various automotive cutting and welding processes. Emphasis is placed on safety, plasma arc, oxy-acetylene cutting, resistance type spot welding, and Metal Inert Gas (MIG) welding. Upon completion, students should be able to safely perform automotive cutting and welding procedures. This is a CORE course. This course supports CIP code 47.0603.

**ABR 157 AUTOMOTIVE PLASTIC REPAIRS**  
(1T, 2E, 3M) **3 credits**  
**PREREQUISITE: As required by college.**  
This course provides instruction in automotive plastic repairs. Topics include plastic welding (airless, hot, and chemical), use of flexible repair fillers, identification of types of plastics, and determining the correct repair procedures for each. Upon completion, students should be able to correctly identify and repair the different types of automotive plastics. This course supports CIP code 47.0603.

**ABR 181 SPECIAL TOPICS IN AUTO BODY**  
(0-1T, 0-1E, 1M) **1 credits**  
This course is guided independent study in special projects to give the student additional training in a specific area selected by the instructor. Emphasis is placed on individual student needs to improve or expand skills. Upon course completion students should be able to demonstrate skills to meet specific needs.

**ABR 182 SPECIAL TOPICS IN AUTO BODY**  
(0-2T, 0-2E, 2M) **2 credits**  
This course is guided independent study in special projects to give the student additional training in a specific area selected by the instructor. Emphasis is placed on individual student needs to improve or expand skills. Upon course completion students should be able to demonstrate skills to meet specific needs.

**ABR 213 AUTOMOTIVE STRUCTURAL ANALYSIS**  
(1T, 2E, 3M) **3 credits**  
**PREREQUISITIES: As required by college**  
Students learn methods of determining structural misalignment. Topics include methods of inspection, types of measuring equipment, data sheets, and identifying types of structural damage. This is a CORE course. This course supports CIP code 47.0603.

**ABR 214 AUTOMOTIVE STRUCTURAL REPAIR**  
(1T, 2E, 3M) **3 credits**  
**PREREQUISITE: As required by college**  
This course provides instruction in the correction of struc-

## Course Descriptions

tural damage. Topics include types and use of alignment equipment, anchoring and pulling methods, and repair/replacement of structural components. This is a CORE course. This course supports CIP code 47.0603.

**ABR 223 AUTOMOTIVE MECHANICAL COMPONENTS (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
This course provides instruction in collision related mechanical repairs. Emphasis is placed on diagnosis and repair to drive train, steering/suspension components, and various other mechanical repairs. This is a CORE course. This course supports CIP code 47.0603.

**ABR 224 AUTOMOTIVE ELECTRICAL COMPONENTS (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
This course provides instruction in collision related electrical repairs and various restraints systems, including seat belts, seat belt tensioners, and airbags. Topics include basic DC theory, types of diagnostic equipment, circuit protection, wire repair, use of wiring diagrams, airbag modules, and impact sensors. This is a CORE course. This course supports CIP code 47.0603 and 47.0604.

**ABR 255 STEERING AND SUSPENSION (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
This course introduces students to the various types of suspension and steering systems used in the automotive industry. Emphasis is placed on system components, suspension angles and effect of body/frame alignment on these components and angles. This is a CORE course. This course supports CIP code 47.0603 and 47.0604.

**ABR 258 HEATING AND AC IN COLLISION REPAIR (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
This course is a study of automotive air conditioning, heating, and cooling systems. Topics include automotive air conditioning, heating and cooling systems theory, component replacement and system service. This is a CORE course. This course supports CIP code 47.0603 and 47.0604.

**ABR 261 RESTRAINT SYSTEMS (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
Both the function and design of various restraints and passive restraints systems, including seat belts, seat belt tensioners, and airbags, will be discussed. Topics include airbag modules and impact sensors for both front and side airbag systems. Students learn about using service manuals, flow charts, and wiring diagrams during the diagnosis and repair process. This is a CORE course. This course supports CIP code 47.0603.

**ABR 265 PAINT DEFECTS AND FINAL REPAIR (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
This course introduces students to methods of identifying paint defects, causes, cures, and final detailing. Student learns to troubleshoot and correct paint imperfections. This is a CORE course. This course supports CIP code

47.0603.

**ABR 266 ALUMINUM WELDING IN COLLISION REPAIR (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
This course covers the principles and techniques of aluminum GMA (MIG) welding. Students learn to set up and tune a welding machine, address safety issues, perform proper welding techniques, prepare metal surfaces, and identify and correct weld defects. This course supports CIP code 47.0603.

**ABR 267 SHOP MANAGEMENT (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
Students are instructed in basic principles of body shop management. Emphasis is placed on management structure, customer/insurance company relations, and sound business practices. Upon completion, students should be able to understand the principles of operating a collision repair facility.

**ABR 281 SPECIAL TOPICS IN AUTO BODY (0-3T, 0-3E, 3M) 3 credits**

This course is guided independent study in special projects to give the student additional training in a specific area selected by the instructor. Emphasis is placed on individual student needs to improve or expand skills. Upon course completion, students should be able to demonstrate skills to meet specific needs.

## AUTOMOTIVE MECHANICS (AUM)

**AUM 101 FUNDAMENTALS OF AUTOMOTIVE TECHNOLOGY (1T, 2E, 3M) 3 credits**

**PREREQUISITIES: As required by college**  
This course provides basic instruction in Fundamentals of Automotive Technology. This is a CORE course and supports CIP code 15.0803 and 47.0604

**AUM 110 ELECTRICAL AND ELECTRONIC SYSTEMS I (1T, 2E, 3M) 3 credits**

**PREREQUISITIES: As required by college**  
This is an introductory course in automotive electrical and electronic systems. Emphasis is placed on troubleshooting and repair of systems, subsystems, and components. This is a CORE course and supports CIP code 15.0803 and 47.0604.

**AUM 121 BRAKING SYSTEMS (1T, 2E, 3M) 3 credits**

**PREREQUISITIES: As required by college**  
This course provides instruction in automotive technology or auto mechanics. Emphasis is placed on the practical application of brakes. This is a CORE course and supports CIP code 15.0803 and 47.0604.

**AUM 122 STEERING AND SUSPENSION (1T, 2E, 3M) 3 credits**

**PREREQUISITIES: As required by college**  
This course provides instruction in automotive technology or auto mechanics. Emphasis is placed on the practical

application of steering and suspension. This is a CORE course and supports CIP code 15.0803 and 47.0604.

**AUM 124 ENGINE REPAIR I (1T, 2E, 3M) 3 credits**  
**PREREQUISITIES: As required by college**

This course provides instruction on the operation, design, and superficial repair of automotive engines. Emphasis is placed on understanding the four-stroke cycle, intake and exhaust manifolds and related parts, engine mechanical timing components, engine cooling and lubrication system principles and repairs, and basic fuel and ignition operation. This is a CORE course and supports CIP code 15.0803 and 47.0604.

**AUM 130 DRIVE TRAIN AND AXLES (1T, 2E, 3M) 3 credits**  
**PREREQUISITIES: As required by college**

This course provides basic instruction in automotive drive trains and axles. Emphasis is placed on the understanding and application of basic internal and external operation relating to proper operation and drivability. This is a CORE course and supports CIP code 15.0803 and 47.0604.

**AUM 133 MOTOR VEHICLE AIR CONDITIONING (1T, 2E, 3M) 3 credits**  
**PREREQUISITIES: As required by college**

This course provides basic instruction in theory, operation, and repair of automotive heating and air conditioning systems. Emphasis is placed on the understanding and repair of vehicle air conditioning and heating systems, including but not limited to air management, electrical and vacuum controls, refrigerant recovery, and component replacement. This is a CORE course and supports CIP code 15.0803 and 47.0604.

**AUM 181 SPECIAL TOPICS (0-1T, 0-2E, 0-3M) 1 credit**  
**PREREQUISITIES: As required by college**

These courses are designed to allow the student to specialize in a particular area of study with minimum instruction in automotive mechanics application and with evaluation at the instructor's discretion. Emphasis is placed on a topic/project that the student is interested in and may include any automotive, or related area in automotive mechanics. Upon completion, the student should be able to work minimum instruction and execute the necessary techniques to finish a live work project of their choice.

**AUM 182 SPECIAL TOPICS (0-2T, 0-4E, 0-6M) 2 credits**  
**PREREQUISITIES: As required by college**

These courses are designed to allow the student to specialize in a particular area of study with minimum instruction in automotive mechanics application and with evaluation at the instructor's discretion. Emphasis is placed on a topic/project that the student is interested in and may include any automotive, or related area in automotive mechanics. Upon completion, the student should be able to work minimum instruction and execute the necessary techniques to finish a live work project of their choice.

**AUM 210 ELECTRICAL AND ELECTRONIC SYSTEMS II (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: As required by college**

This course provides instruction in advanced automotive electrical and electronic systems. Emphasis is placed on advanced troubleshooting and repair of electrical systems, subsystems, and components. This is a CORE course and supports CIP Code 15.0803 and 47.0604.

**AUM 211 ADVANCED ELECTRONICS (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: As required by college**

This course builds on the principles of laws of electricity. Emphasis is placed on series, parallel and series-parallel circuits. Upon completion, students should be able to calculate, build and measure circuits.

**AUM 220 ENGINE REPAIR II (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: As required by college**

This course provides in-depth instruction concerning internal engine diagnosis, overhaul and repair, including but not necessarily limited to the replacement of timing chains, belts, and gears, as well as the replacement or reconditioning of valve train components, pistons, connecting rods, piston rings, bearing, lubrication system components, gas-kets, and oil seals. This course supports CIP Code 47.0604 and 15.0803.

**AUM 224 MAN TRANSMISSION AND TRANSAXLE (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: As required by college**

This course covers basic instruction in manual transmissions and transaxles. Emphasis is placed on the understanding and application of basic internal and external operation relating to proper operation and drive ability. This course supports CIP Code 15.0803 and 47.0604.

**AUM 230 AUTO TRANSMISSION AND TRANSAXLE (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: As required by college**

This course provides basic instruction in automatic transmissions and transaxles. Emphasis is placed on the comprehension of principles and power flow of automatic transmissions and repairing or replacing internal and external components. This is a CORE course supports CIP Code 15.0803 and 47.0604.

**AUM 239 ENGINE PERFORMANCE I (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: As required by college**

This course provides basic instruction in engine performance with emphasis on fuel and ignition systems relating to engine operation. This is a CORE course and supports CIP Code 15.0803 and 47.0604.

**AUM 244 ENGINE PERFORMANCE II (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: As required by college**

This course provides advanced instruction in engine performance. Emphasis is placed on engine management and computer controls of ignition, fuel, and emissions systems relating to engine performance and drive ability. This is a

**Course Descriptions**

CORE course and supports CIP Code 15.0803 and 47.0604.

**AUM 246 AUTOMOTIVE EMISSIONS  
(1T, 2E, 3M)**

**3 credits**

**PREREQUISITE: As required by college**

This is an introductory course in automotive emission systems. Emphasis is placed on troubleshooting and repair of systems, subsystems, and components. This course supports CIP Code 15.0803 and 47.0604.

**AUM 281 SPECIAL TOPICS  
(0-3T, 0-6E, 0-9M)**

**3 credits**

**PREREQUISITE: As required by college**

These courses are designed to allow the student to specialize in a particular area of study with minimum instruction in automotive mechanics application and with evaluation at the instructor's discretion. Emphasis is placed on a topic/project that the student is interested in and may include any automotive, or related area in automotive mechanics. Upon completion, the student should be able to work with minimum instruction and execute the necessary techniques to finish a live work project of their choice.

**CARPENTRY (CAR)**

**CAR 111 CONSTRUCTION BASICS  
(3T)**

**3 credits**

**PREREQUISITE: As required by college**

**COREQUISITE: CAR 114 – Construction Basics Lab**

This course introduces students to the opportunities in and requirements of the construction industry. Topics include economic outlook for construction, employment outlook, job opportunities, training, apprenticeship, entrepreneurship, construction tools, materials and equipment, job safety and OSHA standards. Upon course completion, students should be able to identify the job market, types of training, knowledge of apprenticeship opportunities, construction tools, materials, equipment, and safety procedures. CORE

**CAR 112 FLOORS, WALLS, SITE PREP  
(3T)**

**3credits**

**PREREQUISITE: As required by college**

**COREQUISITE: CAR 113 – Floors, Walls, Site Prep Lab**

This course introduces the student to site preparation, floor and wall layout, and construction. Topics include methods of site preparation, measurement and leveling tools, framing, layouts and components of wall and floor framing to include beams, girders, floor joists, sub-flooring, partitions, bracing, headers, sills, doors and corners. Upon course completion, students will be able to identify various types of wall and floor framing systems and their components, identify building lines set backs, and demonstrate a working knowledge of leveling applications. CORE

**CAR 113 FLOORS, WALLS, AND SITE PREP LAB  
(3T)**

**3 credits**

**PREREQUISITE: As required by college**

**COREQUISITE: CAR 112 – Floors, Walls, and Site Prep**

In this course the student will engage in applications of site preparation, floor and wall layout, and construction. Emphasis is placed on following job safety procedures, the

use of required tools and equipment, performing site preparation, laying out and framing a floor system, and laying out and erecting walls. Students will use various measurement and leveling tools, identify and install beams, girders, floor joists, sub-flooring, and install various wall components such as partitions, bracing, headers, sills, doors and windows, and corners. Upon course completion, students should be able to follow proper safety procedures, identify building lines and set backs, ensure proper site preparation, layout and frame a flow, and layout, frame and erect walls. CORE

**CAR 114 CONSTRUCTIONS BASICS LAB  
(6E)**

**3 credits**

**PREREQUISITE: As required by college**

**COREQUISITE: CAR 111 – Construction Basics**

This course provides practical and safe application of hand, portable power, stationary and pneumatic tools, use of building materials, fasteners and adhesives, and job site safety. Emphasis is placed on the safe use of hand, power, and pneumatic tools, proper selection of lumber, plywood, byproducts, nails, bolts, screws, adhesives, fasteners, construction materials, and job safety. Upon course completion, the student should be able to identify hand, power, stationary, and pneumatic tools and demonstrate their safe use, identify and properly select wood and non-wood building products, and properly use nails, fasteners, and adhesives. CORE

**CAR 121 INTRODUCTION TO BLUEPRINT READING  
(3T)**

**3 credits**

**PREREQUISITE: As required by college**

**COREQUISITE: As required by college**

This course introduces the student to the basic concepts of blueprint reading. Topics include scales, symbols, site plans, notations, schedules, elevations, sections, specifications, and detail drawings. Upon completion, the student should be able to identify drawings, scale various drawings, identify different types of lines, symbols, and notations, as well as use plot plans, describe easements, understand building code concepts, locate utilities, and explain various aspects of all types of plans and drawings. CORE

**CAR 122 CONCRETE AND FORMING  
(3T)**

**3 credits**

**PREREQUISITE: As required by college**

**COREQUISITE: CAR 123 Concrete and Forming Lab**

This course introduces the student to concrete, its properties and uses, and procedures for designing concrete forms. Topics include making and pouring concrete, constructing concrete forms, reinforcement methods, finishing concrete, and job safety. Upon completion, students should be able to list safety rules for the job site, list what concrete is made of, describe how concrete forms are built, and how concrete is poured, reinforced, and finished. CORE

**CAR 123 CONCRETE AND FORMING LAB  
(6E)**

**3 credits**

**PREREQUISITE: As required by college**

**COREQUISITE: CAR 122 Concrete and Flooring**

This course provides practical experience in mixing concrete, building forms, using reinforcing materials, pouring

and finishing concrete, and demonstrating proper safety techniques at the job site. Emphasis is placed on job site safety, concrete forming, mixing, pouring, finishing and reinforcing. Upon completion, the student should be able to demonstrate job safety, set forms, reinforce, mix, pour and finish concrete correctly. CORE

ings, tray ceilings, and box ceilings. Upon completion, the students should be able to install and finish all of the specialties covered. This is an advanced course and supports CIP code 46,0201.

**CAR 131 ROOF AND CEILING SYSTEMS (3T) 3 credits**

**PREREQUISITE: As required by college**  
**COREQUISITE: CAR 133 Roof and Ceiling Systems lab**  
This course focuses on framing ceilings and roofs. Emphasis is placed on the various types of ceiling and roofing frames, rafters, trusses, ceiling joists, roof decking, and roofing materials. Upon completion, students should be able to explain how to frame a roof and ceiling, identify proper installation methods of roofing materials, and describe applicable safety rules. CORE.

**CAR 132 INTERIOR AND EXTERIOR FINISH (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
**COREQUISITE: As required by college**  
This course introduces the student to interior and exterior finishing materials and techniques. Topics include interior trim of windows and doors, ceilings, wall moldings, exterior sidings, trim work, painting and masonry finishes. Upon completion the students should be able to identify, describe the uses of, and install different types of doors, windows, and moldings, identify and install the types of exterior siding and trim, and describe the different types of paint and their proper application. CORE

**CAR 133 ROOF AND CEILING SYSTEMS LAB (6E) 3 credits**

**PREREQUISITE: As required by college**  
**COREQUISITE: CAR 131 roof and ceiling systems**  
This course provides students with practical experience in roof and ceiling layout, framing, and installation. Upon completion, the student should be able to layout and frame a roof and ceiling, cut and install rafters and joists, install trusses, cut and apply roof decking and roofing materials, and apply job site safety rules. CORE.

**CAR 214 INTRODUCTION TO CABINETRY (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
**COREQUISITE: As required by college**  
This course is an introductory cabinetry course. Emphasis is placed on design and construction of cabinetry. Upon completion, the student should be able to design and build cabinets according to specification. This supports CIP code 46.0201.

**CAR 224 FLOOR, WALL, AND CEILING SPECIALTIES (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
**COREQUISITE: As required by college**  
This course focuses on advanced interior applications for floors, walls, and ceilings. Topics include paneling, molding, trim, hardwood floors, drop ceilings, acoustical ceil-

**CAR 226 METAL FRAMING (6E) 3 credits**

**PREREQUISITE: As required by college**  
**COREQUISITE: As required by college**  
This course introduces the students to metal framing of floors, walls, ceilings and roofs. Emphasis is placed on metal frame construction. Upon completion, students are expected to be able to describe components and proper application of metal framing, properly construct floors, walls, ceilings, and roofs.

**CAR 228 STAIRS, MOLDING, AND TRIM (1T, 2E, 3M) 3 credits**

**PREREQUISITE: As required by college**  
**COREQUISITE: As required by college**  
This course focuses on the basics of stair design, layout, and construction. Topics also include cutting and installing stair trim and moldings. Upon course completion, students should be able to layout, cut, and construct stairs, and install trim and molding. This supports CIP code 46.0201.

**CAR 230 RESIDENTIAL REPAIR AND REMOLDING (2T, 2E) 3 credits**

**PREREQUISITE: As required by college**  
**COREQUISITE: As required by college**  
This course focuses on the methods used for a repair or remodeling project. Topics include design, estimation of materials, cost, time, manpower, and problem solving. Upon completion, the students should be able to demonstrate an ability to design a repair or remodeling project; accurately quote materials, cost, time, and manpower requirements; and obtain all necessary permits for construction.

**CAR 232 CONSTRUCTION MANAGEMENT (3T) 3 credits**

**PREREQUISITE: As required by college**  
**COREQUISITE: As required by college**  
This course focuses on the basic information necessary for successfully managing a construction project. Topics include project definition, construction management software, basic building blocks for scheduling, refining a schedule, communications, techniques for estimating material, equipment, time cost, and manpower requirements. Special emphasis topics include requirements for carpentry licensing, filing, qualifications, fees, and exams. Upon completion, students are expected to understand the meaning and purpose of project planning and management, use of a schedule in management, and be able to communicate and coordinate work activities. The students should also be able to develop a comprehensive estimate for a carpentry job and be knowledgeable for the requirements of the state licensing test.

**Course Descriptions**

**DESIGN DRAFTING TECHNOLOGY (DDT)**

**DDT 104 INTRODUCTION TO COMPUTER AIDED DRAFTING FORMERLY DDT 103 (1T,4E)** **3 credits**

This course provides an introduction to basic Computer Aided Drafting and Design (CADD) functions and techniques, using “hands-on” applications. Topics include terminology, hardware, basic CADD and operating system functions, file manipulation, and basic CADD software applications in producing softcopy and hardcopy.

**DDT 111 FUNDAMENTALS OF DRAFTING AND DESIGN TECHNOLOGY (1T, 4E)** **3 credits**

This course serves as an introduction to the field of drafting and design, and provides a foundation for the entire curriculum. Topics include safety, lettering, tools and equipment, geometric constructions, orthographic sketching, and drawing.

**DDT 115 BLUEPRINT READING FOR MACHINISTS (3T)** **3 credits**

This course provides the students with terms and definitions, theory of orthographic projection, and other information required to interpret drawings used in the machine trades. Topics include multiview projections, pictorial drawings, dimensions and notes, lines and symbols, and sketching. Upon completion, students should be able to interpret blueprint drawings used in the machine trades.

**DDT 116 BLUEPRINT READING FOR CONSTRUCTION (3T)** **3 credits**

This course provides the students with terms and definitions, theory of orthographic projection, and other information required to interpret drawings used in the construction trades. Topics include multiview projection, dimensions and notes, lines and symbols, floor plans, elevations, sections, details, schedules, electrical plans and specifications. Upon completion, students should be able to interpret blueprints used in the construction trades.

**DDT 117 MANUFACTURING PROCESSES (1T, 4E)** **3 credits**

This course in materials and processes includes the principles and methodology of material selection, application, and manufacturing processes. Emphasis is directed to solids to include material characteristics, castings, forging, and die assemblies. Upon completion, students should be able to discuss and understand the significance of materials’ properties, structure, basic manufacturing processes, and express and interpret material specifications.

**DDT 118 BASIC ELECTRICAL DRAFTING (1T, 2E, 3M)** **3 credits**  
**PREREQUISITE: DDT 111, 112, 104, or Permission of instructor**

This course covers the universal language of electrical drafting, including electrical lines, symbols, abbreviations, and notation. Emphasis is placed on typical components such as generators, controls, transmission networks, and lighting, heating and cooling devices. Upon completion, students should be able to draw basic diagrams of electrical and electronic circuits using universally accepted lines and symbols.

**DDT 119 ADVANCED ELECTRONIC DRAFTING (1T, 2E, 3M)** **3 credits**  
**PREREQUISITE: DDT 111, 112, 104, or Permission of instructor**

This course introduces drafting and design techniques dealing with production of electronic equipment for consumer, commercial, and military applications. Emphasis is placed on schematic drawings, connection or wiring diagrams, industrial electronic diagrams, ladder schematics, flow block diagrams, and documentation types and techniques related to the power delivery industry. Upon completion, students should be able to prepare documentation specified to ANSI standards and be familiar with the techniques of composition and the unique symbols and practices of industry.

**DDT 121 INTERMEDIATE TECHNICAL DRAWING (1T, 2E, 3M)** **3 credits**  
**PREREQUISITE: DDT 111, 112, 113, or Permission of instructor**

This course is designed to develop a strong foundation in common drafting and design practices and procedures. Topics include auxiliary views, basic space geometry, pictorial drawings, and basic charts and graphs. Upon completion, students should be able to project and develop auxiliary views; locate and specify points, lines, and planes in space; develop axonometric, oblique, and perspective drawings; and draw basic charts and graphs.

**DDT 122 ADVANCED TECHNICAL DRAWING (1T, 2E, 3M)** **3 credits**  
**PREREQUISITE: DDT 111, 112, 103, or Permission of instructor**

This course covers the methods of providing size description and manufacturing information for production drawings. Emphasis will be placed on accepted dimensioning and tolerancing practices including Geometric Dimensioning and Tolerancing for both the Customary English System and the ISO system. Upon completion, students should be able to apply dimensions, tolerances, and notes to drawings to acceptable standards, including Geometric Dimensioning and Tolerancing, and produce drawings using and specifying common threads and various fasteners, including welding methods.

**DDT 124 TECHNICAL DRAWING I (1T,4E)** **3 credits**  
**PREREQUISITE: DDT 104**

This course covers sections, auxiliary views, and basic space geometry. Emphasis will be placed on the theory as well as the mechanics of applying sections, basic dimensioning, auxiliary views, and basic space geometry.

**DDT 125 SURFACE DEVELOPMENT (1T, 2E, 3M)** **3 credits**  
**PREREQUISITE: DDT 111, DDT 112, or Permission of instructor**

This course covers surface intersections and developments. Emphasis is placed on the basic types of intersections using simple geometric forms. Upon completion, students should be able to draw common types of surface

intersections and handle them simply as applications of the concepts learned in this class.

**DDT 127 INTERMEDIATE COMPUTER AIDED DRAFTING AND DESIGN (1T,4E) 3 credits**

This course covers intermediate-level concepts and applications of CADD. Emphasis will be placed on intermediate-level features, commands, and applications of CADD software

**DDT 128 TECHNICAL DRAWING II FORMERLY DDT 121 (1T,4E) 3 credits**

This course is designed to develop a strong foundation in common drafting and design practices and procedures. Topics include dimensioning concepts and pictorial drawings.

**DDT 131 BASIC MACHINE DRAFTING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: DDT 104, DDT 111, or Permission of instructor**

This course in machine drafting and design provides instruction in the largest specialty area of drafting in the United States, in terms of scope and job opportunities. Emphasis will be placed on the applications of multi-view drawings, including drawing organization and content, title block and parts lists, assembly drawings, detail drawings, dimensioning, and application of engineering controls in producing industrial-type working drawings including the application of title blocks, parts lists, assemblies, details, dimensions, and engineering controls.

**DDT 132 ARCHITECTURAL DRAFTING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: DDT 104, DDT 111, or Permission of instructor**

This course in architectural design and drafting introduces basic terminology, concepts, and principles of architectural design and drawing. Topics include design consideration, lettering, terminology, site plans, and construction drawings. Upon completion, students should be able to draw, dimension, and specify basic residential architectural construction drawings.

**DDT 133 BASIC SURVEYING (1T, 2E, 3M) 3 credits**

This course covers the use of surveying instruments, mathematical calculations, and the theory of land surveying. Topics include USGS benchmarks, measuring horizontal and vertical angles and distances, terms, and recording and interpreting field notes. Upon completion, students should be able to recognize benchmarks and measure, specify, and record field notes.

**DDT 134 DESCRIPTIVE GEOMETRY (1T, 2E, 3M) 3 credits**

This course is designed to teach the fundamental concepts of descriptive geometry through an emphasis on logical reasoning, visualization, and practical applications. Topics include orthographic projection, points and lines in space, auxiliary views, plane representation, intersecting and non-intersecting planes, plane development, and calculations.

Upon completion, students should be able to project and intersect points, lines, and planes with their relationship in space, as well as develop surfaces of an object for fabrication purposes.

**DDT 150 THEORY OF RESIDENTIAL DRAWING AND DESIGN (3T) 3 credits**

**COREQUISITE: DDT 155**  
**PREREQUISITE: DDT 104 or Permission of instructor**  
This course provides the theory of residential drawing and design. Topics include architectural styles, house design, site and space planning, climate, drawing requirements, construction materials and process, terminology, and specific types of drawings required to complete a full set of construction documents. Introductory, intermediate, and advanced topics are covered. Emphasis is placed on an understanding of the various issues and requirements essential to the field of residential drawing and design.

**DDT 155 DRAWING FOR RESIDENTIAL CONSTRUCTION (8E) 4 credits**

**COREQUISITE: DDT 150**  
**PREREQUISITE: DDT 104, or Permission of instructor**  
This course is a direct applications lab to the topics covered within DDT 150. Emphasis is placed upon the production of quality construction documents.

**DDT 181 SPECIAL TOPICS IN DRAFTING AND DESIGN TECHNOLOGY (1-3T) 1-3 credits**

These courses provide specialized instruction in various areas related to the drafting industry. Emphasis is placed on meeting students' needs.

**DDT 182 SPECIAL TOPICS IN DRAFTING AND DESIGN TECHNOLOGY (1-3T) 1-3 credits**

These courses provide specialized instruction in various areas related to the drafting industry. Emphasis is placed on meeting students' needs.

**DDT 211 INTERMEDIATE MACHINE DRAFTING (1T, 2E, 3M) 3 credits**

**PREREQUISITE: DDT 131 or Permission of instructor**  
This second course in machine drafting and design provides more advanced instruction in the largest specialty area of drafting. Topics include applications of previously developed skills in the organization and development of more complex working drawings, use of vendor catalogs and The Machinery's Handbook for developing specifications, and use of standardized abbreviations in working drawings.

**DDT 213 CIVIL DRAFTING, PLAT MAPS (1T, 2E, 3M) 3 credits**

**PREREQUISITE: DDT 104, DDT 111, or Permission of instructor**  
This course introduces the drafting practices, symbols, conventions, and standards utilized in civil engineering contract documents. Topics include site planning, land surveying, topographic surveys, along with civil terminology. Upon completion, students should be able to draw accurate plat maps, give legal descriptions of land parcels, draw simple site plans, and identify and use proper symbols and conventions on civil engineering drawings.

## Course Descriptions

- DDT 214 PIPE DRAFTING (1T, 4-6M) 3-4 credits**  
**PREREQUISITE: DDT 104, DDT 111, or Permission of instructor**  
 This course covers the theory and practical application needed to understand piping fundamentals as used in refineries and petrochemical plants. Topics include process and mechanical flow diagrams, plant equipment, isometric drawings, instrumentation symbols, pipe symbols, flanges, fittings, and applications of basic math and trigonometry. Upon completion, students should be able to demonstrate pipe drafting techniques and fundamentals in order to prepare working drawings used in refineries and the petrochemical environment.
- DDT 215 GEOMETRIC DIMENSIONING AND TOLERANCING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: DDT 111 or Permission of instructor**  
 This course is designed to teach fundamental concepts of size description by geometric methods, including appropriate engineering controls. Emphasis is placed on the drawing and application of common geometric dimensioning and tolerancing symbols to engineering drawings as designated by the latest ANSI/ASME Standards. Upon completion, students should be able to use geometric dimensioning and tolerancing symbols in applying size information and manufacturing controls to working drawings.
- DDT 221 ADVANCED MACHINE DRAFTING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: DDT 131 or Permission of instructor**  
 This third course in machine drafting and design covers the development of complex, advanced working drawings by applying previously developed skills. Topics include application of previously developed skills in the organization and development of complex, advanced-level working drawings, including sub-assemblies and a basic design problem. Upon completion, students should be able to organize, layout, and produce complex, advanced-level working drawings, including sub-assemblies and a basic design problem.
- DDT 222 ADVANCED ARCHITECTURAL DRAFTING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: DDT 132 or Permission of instructor**  
 This third course in architectural design and drafting continues with advanced architectural plans, including a slant toward light commercial construction. Topics include climate control plans, application of building codes, building materials and finish specifications, cost estimating, and bid specifications. Upon completion, students should be able to apply current techniques in producing advanced-level architectural plans, including residential and light commercial applications.
- DDT 223 ADVANCED CIVIL DRAFTING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: DDT 213 or Permission of instructor**  
 This course is designed to build on the concepts learned in Civil Drafting I and introduce the student to more complex projects and problems. Topics include, but are not limited to, profiles, staking plans, grading plans, utility plans, and civil detailing. Upon completion, students should be able to accurately draft the documents described previously.
- DDT 224 STRUCTURAL CONCRETE DRAFTING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: DDT 111 or Permission of instructor**  
 This course is designed to develop the knowledge and skills necessary to understand the basic components and terminology of pre-cast and poured-in place concrete structures. Emphasis is placed on pre-cast concrete framing plans, sections, fabrication and connection details, poured-in place concrete foundations, floor systems, and bills of materials. Upon completion, students should be able to construct engineering and shop drawings of concrete beams, columns, floors, roof, and wall framing plans using the A.I.S.C. manual and incorporating safety practices.
- DDT 225 STRUCTURAL STEEL DRAFTING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: DDT 104, DDT 111, or Permission of instructor**  
 This course covers the theory and practical applications necessary to understand the basic design and terminology of structural steel components used in light commercial buildings. Emphasis is placed on structural steel drafting techniques, bolted and welded connections, framing plans, sections, fabrication and connection details, and bills of materials. Upon completion, students should be able to produce engineering and shop drawings incorporating standard shapes, sizes, and details using the A.I.S.C. manual and incorporating safety practices.
- DDT 226 TECHNICAL ILLUSTRATION (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: DDT 121 or Permission of instructor**  
 This course provides the student with various methods of illustrating structures and machine parts. Topics include axonometric drawings; exploded assembly drawings; one point, two point, and three point perspectives; surface textures; and renderings. Upon completion, students should be able to produce drawings and illustrations using the previously described methods.
- DDT 227 STRENGTH OF MATERIALS (4T) 4 credits**  
 This course in statics and strength of materials includes the study of forces and how they act and react on bodies and structures. Topics include the effects of forces as found in structures and machines under conditions of equilibrium, how materials resist forces, strengths of common construction material and structural components. Force systems such as parallel, concurrent, and non-concurrent are studied, and coplanar and non-coplanar situations are included. Upon completion, students should be able to apply the principles of force in engineering drawings.
- DDT 231 ADVANCED CAD (3T, 2E) 4 credits**  
**PREREQUISITE: DDT 131 or Permission of instructor**  
 This course covers the advanced applications of CAD software to engineering projects in various applications, including architectural, civil, mechanical, and environmental engineering, with consideration for advanced physical and psychological principles of CAD. These principles will

be applied toward CAD customization and programming principles for the express purpose of increasing productivity and improving the performance of the CAD operator, thereby making CAD much more productive in an engineering environment. Emphasis will be placed on using intelligent CAD techniques to increase the quality of output. 3D modeling and rendering will be introduced. Upon completion, students should be able to apply advanced CAD techniques in solving complex problems related to all engineering applications.

**DDT 232 CAD CUSTOMIZATION (2T, 2E, 3M) 4 credits**  
**PREREQUISITE: DDT 123 or Permission of instructor**

This course introduces the various methods of customizing CAD software to meet individual or company needs. Topics include menu customization, programming, custom command macros, script files, slides, and slide libraries. Upon completion, students should be able to write menus, write programming routines, and write script files for the purpose of increasing the proficiency of the CAD operator.

**DDT 233 SOLIDS MODELING (2T, 2E, 3M) 4 credits**  
**PREREQUISITE: DDT 123 or Permission of instructor**

This course provides instructions in 3D Design Modeling, utilizing the 3D capabilities of CAD software. Emphasis is placed on 3D wire frame, surface and solids modeling along with the development of 2D detail drawings from 3D models. Upon completion, students should be able to generate 3D surface and solid models and 2D orthographic production drawings from created solid models.

**DDT 235 SPECIALIZED CAD (2T, 2E, 3M) 4 credits**  
**PREREQUISITE: DDT 104 or Permission of instructor**

This course introduces alternative CAD application software and alternative platforms and can serve as a means of introducing third party programs that work in conjunction with a specific CAD application. Topics include various Graphical User Interfaces (GUI's) and how to navigate them, as well as how to use a third party application to make working in a specific CAD package easier and more productive. Upon completion, students should be able to use more than one CAD software package, produce hardcopy, and use third party software to make certain tasks easier with a specific CAD program.

**DDT 236 DESIGN PROJECT (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: Permission of instructor**

This course is designed for advanced students who aspire to more advanced and specialized skills in one certain drafting area. Emphasis is placed on the student's ability to apply the principles learned in previous drafting classes in one special area, as approved by the instructor. The required project must be agreed upon by the instructor and the student, as well as how the work is to be accomplished. Upon completion, students will further reinforce previously learned concepts by applying engineering principles and controls to a personal design project.

**DDT 240 PUBLIC UTILITY DRAFTING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: DDT 223 or Permission of instructor**

This course is designed to develop the knowledge and skills

necessary to understand the basic components of public utility systems. Emphasis is placed on drafting techniques, sections, fabrication and connection details, and bills of materials for fresh water, storm water, and wastewater. Upon completion, students should be able to produce engineering and shop drawings, incorporating safety practices and details using the A.I.S.C. manual.

**HORTICULTURE (HOC)**

**HOC 110 INTRODUCTION TO HORTICULTURE SCIENCE (2T, 2E) 3 credits**

This course introduces students to botany, genetics, and plant nomenclature. Topics include an overview of the horticultural industry and career opportunities. Upon course completion, students will be able to perform basic tasks associated with employment in the horticulture industry.

**HOC 111 HORTICULTURE BUSINESS MANAGEMENT (1T, 2E, 3M) 3 credits**

This course provides the essential information needed to establish and maintain a horticulture-related business. Topics of discussion will include the basic principles of business and personnel management, customer services, insurance, and record keeping. The student will develop an understanding of the requirements placed on the manager of a small business to comply with mandated state and federal regulations and meet consumer demands.

**HOC 115 SOILS AND FERTILIZERS (2T, 2E) 3 credits**

This course is a study of soil properties and the management practices related to the use of fertilizers. Topics include soil classification, mapping, and fertilizer needs based on current and intended use. Upon course completion, students will be able to develop soil fertility management programs.

**HOC 120 PLANT PROPAGATION (1T, 4E) 3 credits**

This course is a study of the seed production, root formation, wound healing, and other practical phases of plant reproduction. Methods commonly used to reproduce plants by sexual and asexual means are emphasized. Upon course completion, students will be able to identify and demonstrate methods of reproducing plants from seeds, cuttings, and layering.

**HOC 125 TURF MANAGEMENT (1T, 4E) 3 credits**

This course is the study of all major southern lawn and sports grasses, including their establishment and maintenance. Topics include turf equipment, fertilizers, insect and disease problems, and mowing techniques. Upon course completion, students will be able to evaluate the quality of an existing turf area and prescribe a maintenance program for turf used for lawns, playing fields, and parks.

**HOC 130 NURSERY PRODUCTION (1T, 4E) 3 credits**  
**PREREQUISITE: HOC 115 or Permission of instructor**

This course focuses on all aspects of producing plants in a

## Course Descriptions

nursery. Topics include soil and other media for plant growth, container selection, plant propagation, watering, and fertilization, pest control, and product practices commonly used by commercial growers. Upon course completion, students will be able to demonstrate proficiency in all phases of nursery plant production.

### HOC 134 INTRODUCTION TO FLORICULTURE

(1T, 2E)

2 credits

This course introduces students to principles of floral design and flower shop management. Topics include design techniques, marketing, and management practices. Upon completion, students should be able to create basic floral designs and demonstrate an understanding of effective flower shop management practices.

### HOC 135 ORNAMENTAL PLANT IDENTIFICATION AND CULTURE

(1T, 4E)

3 credits

This course focuses on the identification and growth requirements of ornamental plants. Topics include identification, habits of growth, cultural requirements, and landscape use of ornamental plants in the southeastern United States. Upon course completion, students will know common and botanical names of landscape plants and will know the appropriate use of each plant.

### HOC 136 RESIDENTIAL LANDSCAPE DESIGN

(2T, 4E)

4 credits

This course provides an overview of the fundamentals of residential site design. Topics include site measuring and base map preparation, functional diagrams, landscape design principles, drafting and drawing procedures, design principles, appropriate use of plant materials, planting, site preparation, and spatial composition. Upon course completion, students will be able to develop a master plan for a residential property.

### HOC 137 COMMERCIAL LANDSCAPE DESIGN

(1T, 2E, 3M)

3 credits

**PREREQUISITE:** Permission of instructor

This course is a study of landscape design principles, drafting and drawing procedures, and the use of plant materials. Emphasis will be placed on drawing techniques and the appropriate use of plant materials in the commercial setting. Lab time is provided for the student to develop landscape drawings.

### HOC 140 ORNAMENTAL PLANT PEST MANAGEMENT

(2T, 2E)

3 credits

This course is a study of plant pests affecting the production and maintenance of ornamental plants. Emphasis is placed on arthropods, weeds, cultural control, chemical control, and disease-causing agents including environmental factors. Upon course completion, students will be able to identify the signs and symptoms of invading pests, the characteristics associated with the onset of diseases in turfgrass and ornamental plants, and will be able to develop appropriate pest control plans.

### HOC 151 IRRIGATION SYSTEMS

(1T, 2E)

2 credits

This course is designed to provide students with the infor-

mation needed to design, layout, and install an irrigation system on residential and commercial properties. Topics of discussion will include system design, cost estimating, installation techniques, and electronic control devices. Upon course completion, students will be able to design and install residential and commercial irrigation systems.

### HOC 167 GOLF COURSE MAINTENANCE

(2T, 2E)

3 credits

This course introduces students to procedures commonly used to maintain golf course greens and fairways. Topics include mowing procedures, fertilizing, watering, pest control, overseeding, and greens protection. Upon completion, students will be able to demonstrate appropriate greens and fairway maintenance procedures.

### HOC 175 SEMINAR IN HORTICULTURE

(1T)

1 credit

**PREREQUISITE:** Permission of instructor

This course focuses on current topics in horticulture. Topics are not normally included in the prescribed course of study, but are to ensure that students remain current in the field.

### HOC 176 ADVANCED STUDIES IN HORTICULTURE

(6M)

2 credits

This course allows students to do practical research to develop a project of special interest under the guidance and supervision of a faculty member. Students and faculty confer in the selection of a project and in identification of objectives.

### HOC 181 SPECIAL TOPICS IN HORTICULTURE

(2-6E, 3-9M)

3 credits

This course provides specialized instruction in various areas related to the horticulture industry. Emphasis is placed on meeting student needs.

### HOC 182 SPECIAL TOPICS IN HORTICULTURE

(2-6E, 3-9M)

3 credits

This course provides specialized instruction in various areas related to the horticulture industry. Emphasis is placed on meeting student needs.

### HOC 210 GREENHOUSE MANAGEMENT

(1T, 4E)

3 credits

This is an introductory course in greenhouse plant production. Topics include types of structures, construction techniques, covering materials, and temperature control. Upon course completion, students will be able to apply basic greenhouse production procedures.

### HOC 211 GREENHOUSE CROP PRODUCTION

(1T, 4E)

3 credits

This is an introductory course in the use of greenhouse facilities for the production of foliage and flowering plant crops. Topics include propagation, scheduling, soils and media, crop selection, pest management, and methods of production. Upon course completion, students will be able to produce a wide range of commercial greenhouse crops.

**HOC 216 LANDSCAPE MAINTENANCE**

(2T, 2E)

**3 credits**

**PREREQUISITE: Permission of instructor**

This course focuses on maintaining plant materials and turf in an existing landscape. Topics include pruning, mowing techniques, pest management, and selection of maintenance equipment. Upon course completion, students will be able to demonstrate landscape maintenance techniques and will be able to prepare labor-time estimates and cost analysis for maintaining landscapes.

**HOC 218 LANDSCAPE CONSTRUCTION**

(2T, 2E)

**3 credits**

This course is an introduction to landscape construction. Emphasis is placed on grading and drainage, site development, irrigation systems, lighting, and other landscape construction. Upon course completion, students will be able to evaluate a blueprint and reconcile it to the job site.

**HOC 230 VEGETABLE AND ORCHARD**

**CROPS (1T, 4E)**

**3 credits**

**PREREQUISITE: HOC 115 or Permission of instructor**

This course focuses on vegetable and fruit crops. Topics include cultural requirements, production procedures, and marketing. Upon course completion, students should be able to grow vegetables and establish orchard layouts.

**MASONRY (MAS)**

**MAS 111 MASONRY FUNDAMENTALS**

(2T, 3M)

**3 credits**

**COREQUISITE: MAS 151**

This course is designed as an introduction and orientation to masonry construction, specifically to brick and block construction. Topics include the identification and safe use of tools, equipment, and masonry materials. Upon completion, students should be able to properly apply masonry techniques.

**MAS 121 BRICK/BLOCK MASONRY (3T)**

**3 credits**

**COREQUISITE: MAS 161, 162**

**PREREQUISITE: MAS 111 or Permission of instructor**

This course is designed to provide the student with a working knowledge of the various concrete block and brick sizes, as well as types of joints. Emphasis is placed on understanding the modular system, wall types, joints, and wall insulation. Upon completion, students should be able to identify methods of brick and block reinforcements, wall supports, and wall types, joints, insulation, and sample panels and prisms.

**MAS 131 RESIDENTIAL/COMMERCIAL**

(3T)

**3 credits**

**COREQUISITE: MAS 171**

**PREREQUISITE: MAS 111 or Permission of instructor**

This course introduces students to residential and commercial construction, plans and layouts, and reinforced masonry. Emphasis is placed on home building, shopping centers and high rise buildings, residential and commercial drawings and their specifications, job costing, job preparation, as well as brick and block moisture control. Upon comple-

tion, students should be able to read full-scale construction drawings, estimate job costs, specify job preparation techniques, and identify methods for veneering a wall, constructing a composite wall, installing expansion joints, setting coping, and moisture control.

**MAS 151 MASONRY FUNDAMENTALS**

**LAB (9M)**

**3 credits**

**COREQUISITE: MAS 111**

This course provides a practical application of industry brick and block construction. Emphasis is placed on mixing mortar, using masonry equipment and tools, job preparation, spreading and furrowing mortar, and dry bonding. Upon completion, students should be able to demonstrate appropriate practices, including safety in brick and block construction to entry-level standards.

**MAS 152 MASONRY FUNDAMENTALS**

**LAB (9M)**

**3 credits**

**PREREQUISITE: MAS 111**

This course provides a practical application of introductory brick and block construction. Emphasis is placed on spreading mortar and laying bricks; coursing bricks; laying a running bond; building course pyramids; and building stretcher, wall common, Flemish, English, and stack bonds. Upon completion, students should be able to demonstrate appropriate practices, including safety, in brick and block construction to entry-level standards.

**MAS 153 SPECIAL TOPICS/PROJECTS**

(1T, 4E)

**3 credits**

A selection of topics/projects related to the masonry profession is addressed in this combined theory and lab course. Subject matter and projects will vary according to industry and student needs, and the course may be repeated for credit within institutional policy. Upon completion, students will demonstrate competencies designed to assess course objectives.

**MAS 161 CONCRETE BLOCK MASONRY**

(9M)

**3 credits**

**COREQUISITE: MAS 121**

**PREREQUISITE: MAS 111 or Permission of instructor**

This course provides practical application of concrete block advanced laying techniques. Emphasis is placed on developing skill in laying concrete block, constructing and reinforcing walls, joints, and sample panels and prisms. Upon completion, students should be able to construct concrete block walls to entry-level standards.

**MAS 162 BRICK MASONRY LAB (9M)**

**COREQUISITE: MAS 121**

**3 credits**

**PREREQUISITE: MAS 111 or Permission of instructor**

This course provides practical application of advanced brick layout techniques. Emphasis is placed on developing skill in laying brick, constructing and reinforcing walls, joints, and sample panels and prisms. Upon completion, students should be able to construct brick walls to entry-level standards.

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**MAS 171 RESIDENTIAL/COMMERCIAL (9M)** **3 credits**  
**COREQUISITE: MAS 131**  
**PREREQUISITE: MAS 111 or Permission of instructor**  
 This course provides application of residential and commercial techniques for plans and layouts, as well as brick veneer, composite walls, expansion joints, and moisture control. Emphasis is placed on developing skill in reading residential and commercial drawings, applying specifications to acceptable code standards, job costing, job preparation, and brick and block moisture control. Upon completion, students should be able to demonstrate use of the scaling rule for a set of plans; identify and sketch standard symbols for walls, openings, floors, and materials; estimate job costs according to plan; utilize appropriate methods to ensure moisture control; lay brick and block to the line; and build brick and block foundations to entry-level standards.

**MAS 181 SPECIAL TOPICS IN MASONRY (3-9M)** **1-3 credits**  
 These courses provide specialized instruction in various areas related to the industry. Emphasis is placed on meeting students' needs.

**MAS 281 SPECIAL TOPICS IN MASONRY (3-9M)** **1-3 credits**  
 These courses provide specialized instruction in various areas related to the industry. Emphasis is placed on meeting students' needs.

## UPHOLSTERY (UPH)

**UPH 111 UPHOLSTERY FUNDAMENTALS AND DESIGN (3T)** **3 credits**  
 This course is designed to introduce the student to a working knowledge of upholstery techniques and hands-on experience using the fundamentals of Upholstery/Design. Emphasis is placed on safety, upholstery terminology, housekeeping, tools, equipment, minor sewing machine repair, a brief history of furniture styles, color, fabrics, woods, and an introduction to principles and elements of furniture/automotive design. Upon completion, the student should be able to cite the principles and elements of design and apply upholstery techniques in all areas specified to complete requirements of this course.

**UPH 112 UPHOLSTERY DESIGN FURNITURE LAB (9M)** **3 credits**  
 This course is designed to teach the student specific techniques and applications in furniture design foundations. Emphasis is placed on proper use, care, storage, and maintenance of tools and equipment and proper application of design techniques working with the function, beauty, and individuality of a good design plan or foundation. Upon completion, students should be able to identify tools and equipment and apply foundation techniques including tying springs, applying stuffing and padding, and using a variety of materials to achieve a good design plan.

**UPH 113 UPHOLSTERY DESIGN AUTO LAB (9M)** **3 credits**  
 This course provides an introduction to automotive techniques and design with application or live work projects.

Emphasis is placed on the application of design techniques including working with springs, door panels, headliners, auto seating, rear shelves, carpet, windlace, arm rests, and dashboards. Upon completion, students should be able to perform hands-on upholstery techniques including design to automotive upholstery.

**UPH 114 UPHOLSTERY DESIGN EXPERIMENTAL LAB (6E)** **3 credits**  
 This course is an experimental lab in Upholstery/Design. It consists of demonstrations by the instructor and experimentation by students. Upon completion, students should be able to demonstrate, with appropriate safety precautions, the basic principles of Upholstery/Design.

**UPH 121 CORRELATING DECORATIVE ELEMENTS (3T)** **3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is designed to effectively bring together the elements and principles of design while allowing the student to specialize in automotive, furniture, or both areas including job planning and decorative techniques. This course covers job planning, layouts, correlation of decorative elements including simple floor plans, color, draperies, wall coverings with special emphasis on diamonds, channeling, and decorative trims. Upon completion, students should be able to plan layouts, identify and apply the principles and elements of design, and select decorative trims that blend with the décor.

**UPH 122 DECORATIVE ELEMENTS FURNITURE LAB (9M)** **3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is designed to teach the student to use a layout in computing yardage and to plan decorative techniques to be used with furniture projects. Topics include layouts, planning, redesigning, use of decorative trims, yardage charts and accessories necessary to achieve a harmonious design. Upon completion, students should be able to execute plans, compute yardage, redesign furniture, and select decorative techniques and accessories to complete a design.

**UPH 123 DECORATIVE ELEMENTS AUTO LAB (9M)** **3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is designed for instruction in using a layout to compute yardage and in planning decorative techniques which include windlace, hidem welt, various trims, and finishing techniques. Upon completion, students should be able to compute yardage from a well-planned layout and apply decorative techniques to the finished automotive upholstery project.

**UPH 124 DECORATIVE ELEMENTS EXPERIMENTAL LAB (6E)** **3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is an experimental lab in Decorative Elements. It consists of demonstrations by the instructor and experimentation by students. Upon completion, students should be able to demonstrate the basic principles of planning, measurement, and the use of appropriate decorative techniques.

**UPH 131 WOOD REPAIR AND REFINISHING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course provides the students with skills necessary to repair or refinish antique woods, repair scars or scratches, and touch-up existing finishes. Topics covered in this course include tools, supplies, repairs, stains, sanding, refinishing products, and special techniques to restore a finish. Upon completion, students should be able to restore woods, replace broken parts, and refinish woods.

**UPH 132 HISTORY OF FURNITURE STYLES (3T) 3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is designed to teach the student to identify period furniture and some of the basics of style using the vocabulary of furniture description. Topics include history of furniture, furniture facts, period furniture, furniture identification, and important trends, fabrics, motifs, woods, finishes, and styles. Upon completion, students should be able to identify furniture styles, periods, motifs, woods and finishes, and coordinate styles.

**UPH 183 SPECIAL TOPICS (1-3T) 1-3 credits**  
 These courses are designed to allow the student to specialize in a particular area of study with minimum supervision in Upholstery/Design application and with evaluation at the instructor's discretion. Emphasis is placed on a topic/project that the student is interested in and may include any automotive, furniture, or related area in Upholstery/Design. Upon completion, students should be able to work with minimum supervision and execute the necessary techniques to finish a live work project of their choice.

**UPH 211 DESIGN INTERIORS FURNITURE AND AUTO (3T) 3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is designed for instruction in planning interiors that satisfy individual needs in furniture or automobiles, using the elements and principles of design. Emphasis is placed on blending styles, specifying interior materials, correlating a color scheme, placing furniture in a room, placing seats in a car or resort vehicle as well as vans and boats. Upon completion, students should be able to work with a customer on appropriate color schemes, materials, and designs which are appropriate for the lifestyles or needs of the family.

**UPH 212 DESIGN INTERIORS FURNITURE LAB (9M) 3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is designed for instruction in applying the principles and elements of design when upholstering furniture and to create a unified design. Emphasis is placed on the use of appropriate fabrics, colors, textures, types of furniture, needs of customers, lifestyles, occupation, commercial or residential setting. Upon completion, students should be able to identify elements of design and apply them to the principles of design in order to achieve a unified design which best suits the décor.

**UPH 213 DESIGN INTERIORS AUTO LAB (9M) 3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is designed to instruct the student to apply the principles and elements of design when upholstering automobiles and to create a unified design. Emphasis is placed on the use of appropriate fabrics, colors, textures, types of automobiles, needs of customers, and purpose for which the vehicle is being upholstered. Upon completion, students should be able to identify elements of design and apply them to the principles of design in order to achieve a unified design which best suits the automobile décor.

**UPH 214 DESIGN INTERIORS EXPERIMENTAL LAB (6E) 3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is an experimental lab in Design Interiors. It consists of demonstration by the instructor and experimentation by students. Upon completion, students should be able to demonstrate their knowledge of materials and other elements of design.

**UPH 215 SHOP MANAGEMENT AND LAYOUT (3T) 3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is designed to provide the student with necessary information to operate and manage an upholstery business. Emphasis is placed on shop layouts, necessary equipment, supplies, tax information, setting up an accounting system and managing work loads and inventory control in a simulated working atmosphere. Upon completion, students should be able to layout, perform set-up, and manage an upholstery business.

**UPH 216 DRAPERIES, CORNICES, BEDDING (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course provides the student with basic techniques in designing draperies, cornices, and bedding. Emphasis is placed on designing headboards, comforters, pillow shams, dust ruffles, cornices, pinch pleats, rod pockets, drapery, and various shades. Upon completion, students should be able to design functional draperies, cornices, and bedding accessories to contribute an aesthetic quality to the décor.

**UPH 217 UPHOLSTERY CRAFTS AND ACCESSORIES (1T, 2E, 3M) 3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is designed to teach the student to construct the most up-to-date crafts/accessories in upholstery. Emphasis is placed on creating patterns, designing crafts, using various fabrics, and identifying a list of new crafts using upholstery materials. Upon completion, students should be able to design upholstery crafts/accessories, create patterns, and use various fabrics.

**UPH 221 AUTOMOTIVE UPHOLSTERY AND DESIGN (3T) 3 credits**  
**PREREQUISITE: Permission of instructor**  
 This course is designed to introduce the student to several different types of automobile interior designs. Topics covered include fabric, vinyl and leather seat inserts, sheared and loop carpet, headliners, and interior panels. Upon

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completion, students should be able to select suitable materials and complete an automotive upholstery project using a style of their choice.

### UPH 222 INTERIOR MATERIALS - FURNITURE (1T, 2E, 3M)

3 credits

**PREREQUISITE: Permission of instructor**

This course is designed to teach the student to choose the most appropriate interior materials to be used on and with furniture. Emphasis is placed on wall paper, paint, upholstery fabrics, drapery fabrics, carpet, paneling, floor coverings, and window treatments. Upon completion, students should be able to utilize interior materials and to advise customers in planning décor.

### UPH 223 INTERIOR MATERIALS-AUTO (1T, 2E, 3M)

3 credits

**PREREQUISITE: Permission of instructor**

This course is designed to teach the student to use interior materials available in the ever-changing industry of automotive upholstery. Emphasis is placed on design, color, pattern, texture, type of vehicle, and durability of fabric to be used in customizing or restoring a vehicle to its original status. Upon completion, students should be able to select materials, match colors, choose suitable patterns, search for new materials, repair damaged materials, and contour new designs.

### UPH 224 AUTO UPHOLSTERY DESIGN EXPERIMENTAL LAB (6E)

3 credits

**PREREQUISITE: Permission of instructor**

This course is an experimental lab in Automotive Upholstery/Design. It consists of demonstrations by the instructor and experimentation by the students. Upon completion, students should be able to apply appropriate techniques in Automotive Upholstery/Design.

### UPH 225 ADVANCED FURNITURE TECHNIQUES (1T, 2E, 3M)

3 credits

**PREREQUISITE: Permission of instructor**

This course is designed for instruction in advanced techniques of furniture coverings and design. Emphasis is placed on advanced cushion making, diamond tufting, redesigning furniture frames, redesigning coverings, advanced skirts, headboards, and other specific projects. Upon completion, students should be able to perform advanced skills necessary to complete furniture redesigns and coverings.

### UPH 226 ADVANCED AUTOMOTIVE TECHNIQUES (1T, 2E, 3M)

3 credits

**PREREQUISITE: Permission of instructor**

This course is designed to instruct the student in advanced automotive techniques necessary to perform skills to complete jobs. Emphasis is placed on tuck and roll, customization, convertible tops, and specialized techniques in boat seats, boat carpeting, tarps, and recreational vehicles. Upon completion, students should be able to apply advanced techniques and skills in any aspect of automotive upholstery.

### UPH 227 QUILTING TECHNIQUES AND DESIGN (1T, 2E, 3M)

3 credits

**PREREQUISITE: Permission of instructor**

This course is designed to introduce the student to basic techniques in quilt design. Emphasis is placed on selecting colors, fabrics, and patterns; piecing; marking appliqué; assembling quilt blocks; using a quilting machine; and using quilting techniques as applied to upholstery. Upon completion, students should be able to select colors, fabrics, assemble quilt pieces in a design, use appliqué, and use basic techniques of quilting in upholstery projects.

### UPH 281 SPECIAL TOPICS (3M)

1 credit

These courses are designed to allow the student to specialize in a particular area of study with minimum supervision in Upholstery/Design application and with evaluation at the instructor's discretion. Emphasis is placed on a topic/project that the student is interested in and may include any automotive, furniture, or related area in Upholstery/Design. Upon completion, students should be able to work with minimum supervision and execute the necessary techniques to finish a live work project of their choice.

## WELDING TECHNOLOGY (WDT)

### WDT 108 SMAW FILLET/OFC (3T)

3 credits

This course provides the student with instruction on safety practices and terminology in the Shielded Metal Arc Welding (SMAW) process. Emphasis is placed on safety, welding terminology, equipment identification, set-up and operation, and related information in the SMAW process. This course also covers the rules of basic safety and identification of shop equipment and provides the student with the skills and knowledge necessary for the safe operation of oxy-fuel cutting.

### WDT 110 INDUSTRIAL BLUEPRINT READING (3T)

3 credits

This course provides students with the understanding and fundamentals of industrial blueprint reading. Emphasis is placed on reading and interpreting lines, views, dimensions, weld joint configurations, and weld symbols. Upon completion, students should be able to interpret welding symbols and blueprints as they apply to welding and fabrication.

### WDT 119 GAS METAL ARC/FLUX CORED ARC WELDING THEORY (3T)

3 credits

This course introduces the student to the gas metal arc and flux cored arc welding process. Emphasis is placed on safe operating practices, handling and storage of compressed gasses, process principles, component identification, various welding techniques, and base and filler metal identification.

### WDT 120 SHIELDED METAL ARC WELDING GROOVE THEORY (3T)

3 credits

This course provides the student with instruction on joint design, joint preparation, and fit-up of groove welds in

accordance with applicable welding codes. Emphasis is placed on safe operation, joint design, joint preparation, and fit-up. Upon completion, students should be able to identify the proper joint design, joint preparation and fit-up of groove welds in accordance with applicable welding codes. This is a CORE course.

**WDT 122 SMAW FILLET/OFC LAB**

**(6E) 3 credits**  
This course is designed to introduce the student to the proper set-up and operations of the shielded metal arc welding equipment. Emphasis is placed on striking and controlling the arc, and proper fit up of fillet joints. This course is also designed to instruct students in the safe operation of oxy-fuel cutting. Upon completion, students should be able to make fillet welds in all positions using electrodes in the F-3 groups in accordance with applicable welding code and be able to safely operate oxy-fuel equipment and perform those operations as per the applicable welding code.

**WDT 123 SMAW FILLET PAC/CAC LAB (6E)**

**3 credits**  
This course is designed to introduce the student to the proper set-up and operations of the shielded metal arc welding equipment. Emphasis is placed on striking and controlling the arc, and proper fit up of fillet joints. This course is also designed to instruct students in the safe operation of plasma arc and carbon arc cutting. Upon completion, students should be able to make fillet welds in all positions using electrodes in the F-4 groups in accordance with applicable welding code and be able to safely operate plasma arc and carbon arc equipment and perform those operations as per the applicable welding code.

**WDT 124 GAS METAL ARC/FLUX CORED ARC WELDING LAB**

**(6E) 3 credits**  
This course provides instruction and demonstration using the various transfer methods and techniques to gas metal arc and flux cored arc welds. Topics included are safety, equipment set-up, joint design and preparation, and gases.

**WDT 125 SHIELDED METAL ARC WELDING GROOVE LAB**

**(6E) 3 credits**  
This course provides instruction and demonstrations in the shielded metal arc welding process on carbon steel plate with various size F3 and F4 group electrodes in all positions. Emphasis is placed on welding groove joints and using various F3 and F4 group electrodes in all positions. Upon completion, the student should be able to make visually acceptable groove weld joints in accordance with applicable welding codes.

**WDT 155 GAS TUNGSTEN ARC WELDING CARBON PIPE LAB**

**(6E) 3 credits**  
This course is designed to provide the student with the skills in welding carbon steel pipe with gas tungsten arc welding techniques in various pipe weld positions. Upon completion, students should be able to perform gas tungsten arc welding on carbon steel pipe with the prescribed filler metals in various positions in accordance with the applicable code.

**WDT 180 SPECIAL TOPICS**

**(6E) 3 credits**  
This course allows the student to plan, execute, and present results of individual projects in welding. Emphasis is placed on enhancing skill attainment in the welding field. The student will be able to demonstrate and apply competencies identified and agreed upon between the student and instructor.

**WDT 181 SELECTED TOPICS LAB**

**(6E) 3 credits**  
This course provides specialized instruction in various areas related to the welding industry. Emphasis is placed on meeting students needs.

**WDT 217 SMAW CARBON PIPE THEORY**

**(3T) 3 credits**  
This course introduces the student to the practices and procedures of welding carbon steel pipe using the shielded metal arc weld (SMAW) process. Emphasis is placed on pipe positions, electrode selection, joint geometry, and joint preparation and fit-up. Upon completion, students should be able to identify pipe positions, electrodes, proper joint geometry, joint preparation, and fit-up in accordance with applicable code.

**WDT 218 CERTIFICATION THEORY**

**(3T) 3 credits**  
This course is designed to provide the student with the knowledge needed to perform welds using the prescribed welding process. Emphasis is placed on the welding test joints in accordance with the prescribed welding code. Upon completion, students should be able to pass a industry standard welding test in accordance with various applicable welding code requirements.

**WDT 228 GAS TUNGSTEN ARC WELDING THEORY**

**(3T) 3 credits**  
This course provides the student with knowledge needed to perform gas tungsten arc welds using ferrous and/or non-ferrous metals, according to applicable welding codes. Topics include safe operating practices, equipment identification and set-up, correct selection of tungsten type, polarity, shielding gas, and filler metals. Upon completion, a student should be able to identify safe operating practices, equipment identification and set-up, correct selection of tungsten type, polarity, shielding gas, filler metals, and various welds on ferrous and/or non-ferrous metals, using the gas tungsten arc welding process according to applicable welding codes.

**WDT 257 SMAW CARBON PIPE LAB**

**(6E) 3 credits**  
**COREQUISITE: WDT 217**  
This course is designed to provide the student with the skills in welding carbon steel pipe with shielded metal arc welding techniques in various pipe weld positions. Upon completion, students should be able to perform gas tungsten arc welding on carbon steel pipe with the prescribed filler metals in various positions in accordance with the applicable code.

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### **WDT 258 CERTIFICATION LAB**

(6E)

**3 credits**

This course is designed to provide the student with the skills needed to perform welds using the prescribed welding process. Emphasis is placed on the welding test joints in accordance with the prescribed welding code. Upon completion, students should be able to pass a industry standard welding test in accordance with various welding code requirements.

### **WDT 268 GAS TUNGSTEN ARC WELDING LAB**

(6E)

**3 credits**

This course provides the student with skills needed to perform gas tungsten arc welds using ferrous and/or non-ferrous metals, according to applicable welding codes. Topics include safe operating practices, equipment identification and set-up, correct selection of tungsten type, polarity, shielding gas and filler metals. Upon completion, a student should be able to identify safe operating practices, equipment identification and set-up, correct selection of tungsten type, polarity, shielding gas, filler metals, and various welds on ferrous and/or non-ferrous metals, using the gas tungsten arc welding process according to applicable welding codes.

### **WDT 269 BOILER TUBE LAB**

(6E)

**3 credits**

This course is designed to provide the student with the skills in welding boiler tubes using the gas tungsten arc and shielded metal arc welding process using filler metals in the F6 and F4 groups to applicable code. Emphasis is placed on welding boiler tubes using the gas tungsten arc and shielded metal arc welding process in the 2G and 6G positions in accordance with the applicable code. Upon completion, students should be able to perform gas tungsten arc and shielded metal arc welding on boiler tubes with the prescribed filler metals in the 2G and 6G positions to the applicable code.