

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

- 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**
FORMERLY: ADL 085
 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**
FORMERLY: ADL 088
 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.

	projects in Collision Repair Technology. Emphasis is placed on student needs. Upon completion, students should be able to demonstrate skills developed to meet specific needs.		
ABR 211	STRUCTURAL ANALYSIS (1T, 2E, 3M) FORMERLY: ABR 211 Students learn methods of determining structural misalignment. Topics include methods of inspection, types of measuring equipment, data sheets, and identifying types of structural damage. Upon completion, students should be able to locate and identify structural damage.	3 credits	ABR 253 AIR CONDITIONING AND COOLING (1T, 2E, 3M) 3 credits This course is a study of automotive air conditioning and cooling systems. Topics include automotive air conditioning and cooling theory, component replacement, and system service. Upon completion, students should be able to repair and service air conditioning and cooling systems related to collision repair.
ABR 212	STRUCTURAL REPAIR (1T, 2E, 3M) FORMERLY: ABR 201 This course provides instruction in the correction of structural damage. Topics include types and use of alignment equipment, anchoring and pulling methods, and repair/replacement of structural components. Upon completion, students should be able to replace and/or align structural components to factory specification.	3 credits	ABR 254 COLLISION DAMAGE REPORTS (1T, 2E, 3M) FORMERLY: ABR 110 Students are introduced to the principle of collision cost estimating. Emphasis is placed on the calculation of parts and labor amount based on collision estimating guides. Upon completion, students should be able to prepare an accurate damage report (estimate).
ABR 221	MECHANICAL COMPONENTS (1T, 2E, 3M) FORMERLY: ABR 202 This course provides instruction in collision-related mechanical repairs. Emphasis is placed on diagnosis and repairs to drivetrain, steering/suspension components and various other mechanical repairs. Upon completion, students should be able to diagnose and repair collision-damaged mechanical components.	3 credits	ABR 255 STEERING AND SUSPENSION (1T, 2E, 3M) 3 credits 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. Upon completion, students should be able to repair and/or replace damaged components and prepare the vehicle for alignment.
ABR 222	ELECTRICAL COMPONENTS (1T, 2E, 3M) 3 credits This course provides instruction in collision-related electrical repairs. Topics include basic DC theory, types of diagnostic equipment, circuit protection, wire repair, and use of wiring diagrams. Upon completion, students should be able to diagnose and repair collision-damaged electrical components.		ABR 256 TOPCOAT APPLICATIONS (1T, 2E, 3M) FORMERLY: ABR 213 3 credits This course focuses on the application of various automotive topcoats. Topics include applying single-stage, basecoat/clearcoat, and tri-coat finishes. Upon completion, students should be able to properly apply automotive topcoats.
ABR 251	COLOR ADJUSTMENTS (1T, 2E, 3M) FORMERLY: ABR 205 Students are introduced to principles of matching automotive finishes. Emphasis is placed on color theory and color adjustments. Upon completion, students should be able to match color and texture of automotive finishes.	3 credits	ABR 257 ADVANCED STRUCTURAL REPAIR (1T, 2E, 3M) FORMERLY: ABR 111 3 credits This course provides instruction in the correction of major structural damage. Topics include types and use of alignment equipment, anchoring and pulling methods, and repair/replacement of major structural components. Upon completion, students should be able to replace and/or align major structural components to factory specification.
ABR 252	BODY SHOP MANAGEMENT (3T) FORMERLY: ABR 112 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.	3 credits	ABR 281 SPECIAL TOPICS IN AUTO BODY (3-9M) 1-3 credits This course is a guided independent study of special projects in Collision Repair Technology. Emphasis is placed on student needs. Upon completion, students should be able to demonstrate skills developed to meet specific needs.
			ABR 282 SPECIAL TOPICS IN AUTO BODY (3-9M) 1-3 credits This course is a guided independent study of special projects in Collision Repair Technology. Emphasis is placed on student needs. Upon completion, students should be able to demonstrate skills developed to meet specific needs.

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ABR 283 SPECIAL TOPICS IN AUTO BODY (3-9M) 1-3 credits
This course is a guided independent study of special projects in Collision Repair Technology. Emphasis is placed on student needs. Upon completion, students should be able to demonstrate skills developed to meet specific needs.

AUTOMOTIVE MECHANICS (AUM)

AUM 101 FUNDAMENTALS OF AUTOMOTIVE TECHNOLOGY (1T, 2E, 3M) 3 credits
FORMERLY: AUM 111
This course provides a study of safety rules and procedures based on OSHA standards. Topics include the use of shop tools and equipment, measuring devices, preventive maintenance, light duty service procedures, and the use of shop manuals. Upon completion, students should be able to use basic tools and equipment safely and in observance of OSHA standards.

AUM 111 AUTOMOTIVE ELECTRICAL SYSTEMS (1T, 2E, 3M) 3 credits
This course provides a study of the principles of electricity, magnetism, and Ohm's Law. Emphasis is placed on batteries, starting, charging, and lighting circuits. Upon completion, students should be able to identify and repair minor electrical problems in the automobile.

AUM 112 STARTING, CHARGING SYSTEMS AND ACCESSORIES (1T, 2E, 3M) 3 credits
This course is designed to provide the basic knowledge of troubleshooting, maintenance and repair of automotive electrical accessories. This includes the use of special tools when servicing batteries, starting systems, changing and lighting systems. All troubleshooting and maintenance procedures must be in accordance with manufacturer's specifications.

AUM 121 BRAKING SYSTEMS (1T, 2E, 3M) 3 credits
FORMERLY: AUM 122
PREREQUISITE: AUM 111 or Permission of instructor
This course provides a detailed study of types of hydraulic brake systems (disc and drum) and their service requirements. Topics include brake fundamentals, master cylinders, power assist units, parking brake, lines and valves and anti-lock systems. Upon completion, students should be able to repair brake systems.

AUM 122 STEERING, SUSPENSION AND ALIGNMENT (1T, 2E, 3M) 3 credits
FORMERLY: AUM 121
This course is designed to give a working knowledge of the design, operation, diagnosis, and repair of con-

ventional and strut-type suspension systems. Topics include alignment procedures, wheel balancing, and conventional and rack and pinion steering systems. Upon completion, students should be able to make repairs and adjustments to suspension systems.

AUM 123 ENGINE PRINCIPLES (1T, 2E, 3M) 3 credits
FORMERLY: AUM 221

This course provides a study of engine construction, operation and service, identification of engine components, systems and subsystems. Topics include the operation, service, and repair of the lubricating and cooling systems. Upon completion, students should be able to perform basic repairs on a variety of engines.

AUM 131 POWERTRAIN FUNDAMENTALS (1T, 2E, 3M) 3 credits

This course provides a study of the automotive power flow from the transmission to the drive wheels. Topics include drive lines, gear ratios, differentials, drive axles, troubleshooting, and diagnostics. Upon completion, students should be able to troubleshoot, diagnose, and repair automatic and manual power trains.

AUM 132 AUTOMOTIVE HEATING AND AIR CONDITIONING (1T, 2E, 3M) 3 credits
PREREQUISITE: AUM 111 or Permission of instructor

This course covers nomenclature, theory of operation, repairs and service procedures, electrical control circuits for the compressor, blower, and coolant fan. Emphasis is placed on proper use of service manuals and safety. Upon completion, students should be able to diagnose and repair heat and air conditioning systems.

AUM 181 SPECIAL TOPICS (3-9M) 1-3 credits

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 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.

AUM 211 AUTOMOTIVE ELECTRONICS (1T, 2E, 3M) 3 credits
FORMERLY: AUM 131
PREREQUISITE: AUM 111 or Permission of instructor

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 212 FUEL SYSTEMS (1T, 2E, 3M) 3 credits**
FORMERLY: AUM 134
PREREQUISITE: AUM 111 or Permission of instructor
 This course focuses on fuel delivery system operation and diagnosis and repair of fuel system components. Emphasis is placed on servicing the fuel injection system. Upon completion, students should be able to perform advanced engine tune-ups.
- AUM 214 IGNITION SYSTEMS (1T, 2E, 3M) 3 credits**
FORMERLY: AUM 231
PREREQUISITE: Permission of instructor
 This course provides a study of the principles of operation, diagnosis, and repair of the ignition's system components. Topics include primary and secondary circuit operations and diagnosis and repair of conventional electronic and distributorless ignition systems. Upon completion, students should be prepared to diagnose and repair ignition system problems.
- AUM 221 ENGINE REPAIR (1T, 2E, 3M) 3 credits**
FORMERLY: AUM 211
PREREQUISITE: AUM 123 or Permission of instructor
 This course provides understanding of troubleshooting and repair procedures for the gasoline engine. Topics include engine disassembly, identification of components, inspection and measuring of parts, repair and reassembly, use of service manuals, and safety. Upon completion, students should be able to repair or rebuild an automotive engine.
- AUM 222 MANUAL TRANSMISSION/TRANSAXLE (1T, 2E, 3M) 3 credits**
PREREQUISITE: AUM 131 or Permission of instructor
 This course includes a study of manual transmission/transaxle components, gear ratios, and power flow. Topics include manual and hydraulic clutches and their service and repair. Upon completion, students should be able to remove, repair, and replace manual transmission/transaxle components.
- AUM 231 AUTOMATIC TRANSMISSION/TRANSAXLE (1T, 2E, 3M) 3 credits**
FORMERLY: AUM 232
PREREQUISITE: AUM 131 or Permission of instructor
 This course is designed to provide a working knowledge of the construction and operation of automatic transmission/transaxles. Topics include the study of torque converters, gear and clutch assemblies, hydraulic and mechanical power flow, and electronic controls. Upon completion, students should be able to remove, install, and perform basic repairs on automatic transmissions and transaxles.
- AUM 240 ENGINE PERFORMANCE (1T, 2E, 3M) 3 credits**
FORMERLY: AUM 212
PREREQUISITE: AUM 111, AUM 211 or Permission of instructor
 This course focuses on diagnostic procedures as relat-

ed to the microprocessor and its sensors. Emphasis is placed on the use of digital volt meters, fluke meters, and their ability to locate an electrical problem. Upon completion, students should be able to diagnose engine performance.

- AUM 281 SPECIAL TOPICS (3-9M) 1-3 credits**
PREREQUISITE: Permission of instructor
 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 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 his choice.

CARPENTRY (CAR)

- CAR 111 CONSTRUCTION BASICS (1T, 2E, 3M) 3 credits**
FORMERLY: CAR 110
 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, and job safety. 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.
- CAR 112 FLOORS, WALLS, SITE PREP (3T) 3 credits**
FORMERLY: CAR 111
PREREQUISITE: CAR 111 or Permission of instructor
 This course introduces the student to floor and wall layout, and construction. Topics include methods of house framing, components of floor framing, layouts, sub-flooring, connectors and fasteners, and site preparation. Upon course completion, students should be able to identify various types of floor framing systems, select the sizes of floor joists, identify types of house framing, list types of fasteners, identify property lines, and set backs, and demonstrate a working knowledge of terrain and batter boards.
- CAR 113 FLOORS, WALLS, SITE PREP LAB (9M) 3 credits**
COREQUISITE: CAR 112
PREREQUISITE: CAR 111 or Permission of instructor
 The student will engage in applications of floor and wall construction, application of required tools, use of the builder transit, level rod, tape measures, and grade stakes. Emphasis is placed on cutting sill plates, floor joists, girders, header bridging, sub-flooring, stud wall partitions, door and window headers, wall bracing, leveling instruments, and batter boards. Upon completion, students should be able to layout and construct a

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	floor, including the sill, joist bridging and openings, install sub-flooring, construct interior and exterior walls, and layout property stakes of site plans.		components and proper application of structured steel, properly construct walls and floors, and demonstrate proper use of metal studs in framing members.
CAR 114	INTRODUCTION TO CARPENTRY TOOLS AND MATERIALS (9M) 3 credits 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 and other construction materials; and job safety. Upon completion, students 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.	CAR 131	ROOF AND CEILING SYSTEMS (3T) 3 credits FORMERLY: CAR 122 COREQUISITE: CAR 133 PREREQUISITE: CAR 111 or Permission of instructor This course focuses on the design and installation of roof and ceiling systems. Emphasis is placed on rafters, trusses, ceiling joists, roof decking, and roofing materials. Upon completion, students should be able to design a roof and ceiling system, identify proper installation methods of roofing materials, and describe applicable safety rules.
CAR 121	INTRODUCTION TO BLUEPRINT READING (3T) 3 credits FORMERLY: CAR 113 This course introduces the student to the basic concepts of blueprint reading. Topics include scales, symbols, site plans, and notations. Upon completion, students should be able to identify drawings, scale various drawings, and identify different types of lines, symbols, and notations.	CAR 132	INTERIOR AND EXTERIOR FINISHING (1T, 2E, 3M) 3 credits FORMERLY: CAR 131 PREREQUISITE: CAR 111 or Permission of instructor This course introduces the student to interior and exterior finishing materials and techniques. Topics include interior trim of windows and doors, ceilings and wall moldings, exterior siding, trim work, painting, and masonry finishes. Upon completion, students should be able to identify different types of doors, windows and moldings and describe the uses of each; identify types of exterior sidings and trim; and describe the different types of paint and their proper application.
CAR 122	CONCRETE AND FORMING (1T, 2E, 3M) 3 credits FORMERLY: CAR 142 PREREQUISITE: CAR 111 or Permission of instructor This course introduces the student to the properties and uses of concrete and to the 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; identify components of concrete; describe how concrete forms are built; and how concrete is poured, reinforced, and finished.	CAR 133	ROOF AND CEILING SYSTEMS LAB (9M) 3 credits FORMERLY: CAR 123 COREQUISITE: CAR 131 PREREQUISITE: CAR 111 or Permission of instructor This course provides students with practical experience in building and installing roof and ceiling systems. Emphasis is placed on job site safety, layout and cutting of rafters and joists, cutting and building trusses, and installing roof decking and roofing materials. Upon completion, students should be able to cut and install rafters, joists, and trusses; cut and apply roof decking and roofing materials; and apply safety rules for job site.
CAR 123	CONCRETE AND FORMING LAB (9M) 3 credits COREQUISITE: CAR 122 PREREQUISITE: CAR 111 or Permission of instructor This course provides students with practical experience in concrete applications. Emphasis is placed on job site safety and concrete forming, mixing, pouring, finishing and reinforcing. Upon completion, students should be able to safely set forms and reinforce, mix, pour, and finish concrete.	CAR 191	INTERNSHIP IN CARPENTRY (5-15M) 1-3 credits FORMERLY: CAR 143 PREREQUISITE: CAR 111 or Permission of instructor This course is designed to provide exposure to carpentry practices in non-employment situations. Emphasis is placed on techniques used in the carpentry profession. This course allows students to refine their skills necessary for entry-level employment.
CAR 124	WALL AND FLOOR SPECIALITIES (9M) 3 credits FORMERLY: CAR 121 PREREQUISITE: CAR 111 or Permission of instructor This course introduces the student to the use of structural steel and metal studs in walls and floors. Emphasis is placed on wall and floor construction. Upon completion, students should be able to describe		

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DDT 112	<p>INTRODUCTORY TECHNICAL DRAWING (1T, 2E, 3M) FORMERLY: DDT 102</p> <p>This course covers drawing reproduction and orthographic projection and sectioning. Emphasis will be placed on the theory as well as the mechanics of orthographic projections and shape description, the relationship of orthographic planes and views, the views and their space dimensions, the application of the various types of sections, and drawing reproduction. Upon completion, students should have an understanding of orthographic projections and be able to identify orthographic planes, produce orthographic views of objects, apply the various sectioning techniques and methods, and reproduce drawings.</p>	3 credits			<p>sion 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.</p>
DDT 115	<p>BLUEPRINT READING FOR MACHINISTS (3T) FORMERLY: DDT 200</p> <p>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.</p>	3 credits		DDT 119	<p>ADVANCED ELECTRONIC DRAFTING (1T, 2E, 3M) FORMERLY: DDT 207 PREREQUISITE: DDT 111, 112, 103 or Permission of instructor</p> <p>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.</p>
DDT 116	<p>BLUEPRINT READING FOR CONSTRUCTION (3T) FORMERLY: DDT 150</p> <p>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.</p>	3 credits		DDT 121	<p>INTERMEDIATE TECHNICAL DRAWING (1T, 2E, 3M) FORMERLY: DDT 108 PREREQUISITE: DDT 111, 112, 113, or Permission of instructor</p> <p>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.</p>
DDT 117	<p>MANUFACTURING PROCESSES (1T, 4E) FORMERLY: DDT 204</p> <p>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.</p>	3 credits		DDT 122	<p>ADVANCED TECHNICAL DRAWING (1T, 2E, 3M) FORMERLY: DDT 107 PREREQUISITE: DDT 111, 112, 103 or Permission of instructor</p> <p>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.</p>
DDT 118	<p>BASIC ELECTRICAL DRAFTING (1T, 2E, 3M) FORMERLY: DDT 206 PREREQUISITE: DDT 111, 112, 103 or Permission of instructor</p> <p>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, transmis-</p>	3 credits		DDT 123	<p>INTERMEDIATE CAD (2T, 2E, 3M) FORMERLY: DDT 153 PREREQUISITE: DDT 103 or Permission of instructor</p> <p>This course covers intermediate-level concepts and applications of CAD design and drafting. Emphasis is placed on intermediate-level features, commands, and</p>

applications of CAD software. Upon completion, students should be able to develop and use external references and paper space, apply higher-level block creation techniques and usage, including attributes, and apply basic-level customization techniques to CAD software.

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 131 MACHINE DRAFTING BASICS (1T, 2E, 3M) 3 credits
FORMERLY: DDT 104
PREREQUISITE: DDT 111, DDT 112, DDT 103 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
FORMERLY: DDT 232
PREREQUISITE: DDT 111, DDT 112, DDT 103 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
FORMERLY: DDT 210

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
FORMERLY: DDT 177

This course is designed to teach the fundamental con-

cepts 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 103 and DDT 112 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 (12M) 4 credits
COREQUISITE: DDT 150
PREREQUISITE: DDT 112 and DDT 103 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.



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DDT 211	<p>INTERMEDIATE MACHINE DRAFTING (1T, 2E, 3M) 3 credits FORMERLY: DDT 201 PREREQUISITE: DDT 131 or Permission of instructor</p> <p>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 <i>The Machinery's Handbook</i> for developing specifications, and use of standardized abbreviations in working drawings.</p>	DDT 215	<p>GEOMETRIC DIMENSIONING AND TOLERANCING (1T, 2E, 3M) 3 credits FORMERLY: DDT 202 PREREQUISITE: DDT 111, 112, 113, or Permission of instructor</p> <p>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.</p>
DDT 212	<p>INTERMEDIATE ARCHITECTURAL DRAFTING (1T, 2E, 3M) 3 credits FORMERLY: DDT 233 PREREQUISITE: DDT 132 or Permission of instructor</p> <p>This second course in architectural design and drafting continues with more advanced and detailed architectural plans. Topics include floor construction and detailing; foundation, wall, and roof constructions and details; and use of standard manuals, perspective drawings, electrical plans, plumbing plans, and building materials, with emphasis on residential and some light commercial applications. Upon completion, students should be able to draw and specify advanced-level plans including various architectural details.</p>	DDT 221	<p>ADVANCED MACHINE DRAFTING (1T, 2E, 3M) 3 credits FORMERLY: DDT 203 PREREQUISITE: DDT 131 or Permission of instructor</p> <p>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.</p>
DDT 213	<p>CIVIL DRAFTING, PLAT MAPS (1T, 2E, 3M) 3 credits FORMERLY: DDT 211 PREREQUISITE: DDT 111, 112, 103 or Permission of instructor</p> <p>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.</p>	DDT 222	<p>ADVANCED ARCHITECTURAL DRAFTING (1T, 2E, 3M) 3 credits FORMERLY: DDT 234 PREREQUISITE: DDT 132 or Permission of instructor</p> <p>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.</p>
DDT 214	<p>PIPE DRAFTING (1T, 4-6M) 3-4 credits FORMERLY: DDT 205 PREREQUISITE: DDT 111, 112, 103 or Permission of instructor</p> <p>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.</p>	DDT 223	<p>ADVANCED CIVIL DRAFTING (1T, 2E, 3M) 3 credits FORMERLY: DDT 212 PREREQUISITE: DDT 213 or Permission of instructor</p> <p>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.</p>

DDT 224 **STRUCTURAL CONCRETE DRAFTING (1T, 2E, 3M)** **3 credits**
FORMERLY: DDT 217
PREREQUISITE: DDT 111, 112, 103 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**
FORMERLY: DDT 215
PREREQUISITE: DDT 111, 112, 103 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**
FORMERLY: DDT 154
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**
FORMERLY: DDT 155
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.



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- DDT 235** **SPECIALIZED CAD (2T, 2E, 3M)** **4 credits**
FORMERLY: DDT 214
PREREQUISITE: DDT 103 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 and 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**
FORMERLY: DDT 216
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**
FORMERLY: DDT 213
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**
FORMERLY: HOC 1151
 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**
FORMERLY: HOC 1201
 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**
FORMERLY: HOC 1251
 This course is the study of all major southern lawn and sports grasses, 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**
FORMERLY: HOC 1301
PREREQUISITE: HOC 115 or Permission of instructor
 This course focuses on all aspects of producing plants in a 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.			ornamental plants and will be able to develop appropriate pest control plans.
HOC 134	INTRODUCTION TO FLORICULTURE (1T, 2E) 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.	2 credits	HOC 151	IRRIGATION SYSTEMS (1T, 2E) FORMERLY: HOC 1511 This course is designed to provide students with the information 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 135	ORNAMENTAL PLANT IDENTIFICATION AND CULTURE (1T, 4E) FORMERLY: HOC 1359 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.	3 credits	HOC 167	GOLF COURSE MAINTENANCE (2T, 2E) FORMERLY: HOC 1513 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 136	RESIDENTIAL LANDSCAPE DESIGN (2T, 4E) FORMERLY: HOC 2201 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.	4 credits	HOC 175	SEMINAR IN HORTICULTURE (1T) 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 137	COMMERCIAL LANDSCAPE DESIGN (1T, 2E, 3M) FORMERLY: HOC 2211 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.	3 credits	HOC 176	ADVANCED STUDIES IN HORTICULTURE (6M) This course allows students to do practical research and 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 140	ORNAMENTAL PLANT PEST MANAGEMENT (2T, 2E) FORMERLY: HOC 1405 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 and the characteristics associated with the onset of diseases in turfgrass and	3 credits	HOC 181	SPECIAL TOPICS IN HORTICULTURE (2-6E, 3-9M) This course provides specialized instruction in various areas related to the horticulture industry. Emphasis is placed on meeting students' needs.
			HOC 182	SPECIAL TOPICS IN HORTICULTURE (2-6E, 3-9M) This course provides specialized instruction in various areas related to the horticulture industry. Emphasis is placed on meeting students' needs.
			HOC 210	GREENHOUSE MANAGEMENT (1T, 4E) FORMERLY: HOC 2109 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.

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- HOC 211 GREENHOUSE CROP PRODUCTION (1T, 4E) 3 credits**
FORMERLY: HOC 2101
 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**
FORMERLY: HOC 2217
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**
FORMERLY: HOC 2303
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**
FORMERLY: MAS 112
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**
FORMERLY: MAS 124
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 specifications, job costing, job preparation, as well as brick and block moisture control. Upon completion, 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
FORMERLY: MAS 123
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 bricks in 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, 5E) 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
FORMERLY: MAS 122
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) 3 credits
FORMERLY: MAS 113
COREQUISITE: MAS 121
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.

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 and 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
FORMERLY: UPH 100
 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
FORMERLY: UPH 111
 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
FORMERLY: UPH 222
 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.

Course Descriptions

COURSE DESCRIPTIONS

UPH 114	<p>UPHOLSTERY DESIGN EXPERIMENTAL LAB (6E) 3 credits FORMERLY: UPH 101</p> <p>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.</p>	UPH 131	<p>WOOD REPAIR AND REFINISHING (1T, 2E, 3M) 3 credits FORMERLY: UPH 122 PREREQUISITE: Permission of instructor</p> <p>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.</p>
UPH 121	<p>CORRELATING DECORATIVE ELEMENTS (3T) 3 credits PREREQUISITE: Permission of instructor</p> <p>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.</p>	UPH 132	<p>HISTORY OF FURNITURE STYLES (3T) 3 credits PREREQUISITE: Permission of instructor</p> <p>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.</p>
UPH 122	<p>DECORATIVE ELEMENTS FURNITURE LAB (9M) 3 credits FORMERLY: UPH 212 PREREQUISITE: Permission of instructor</p> <p>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.</p>	UPH 183	<p>SPECIAL TOPICS (1-3T) 1-3 credits</p> <p>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.</p>
UPH 123	<p>DECORATIVE ELEMENTS AUTO LAB (9M) 3 credits FORMERLY: UPH 241 PREREQUISITE: Permission of instructor</p> <p>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.</p>	UPH 211	<p>DESIGN INTERIORS FURNITURE AND AUTO (3T) 3 credits PREREQUISITE: Permission of instructor</p> <p>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.</p>
UPH 124	<p>DECORATIVE ELEMENTS EXPERIMENTAL LAB (6E) 3 credits FORMERLY: UPH 233 PREREQUISITE: Permission of instructor</p> <p>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.</p>	UPH 212	<p>DESIGN INTERIORS FURNITURE LAB (9M) 3 credits FORMERLY: UPH 251 PREREQUISITE: Permission of instructor</p> <p>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,</p>

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
FORMERLY: UPH 242
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
FORMERLY: UPH 231
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
FORMERLY: UPH 133
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
FORMERLY: UPH 232
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
FORMERLY: UPH 213
PREREQUISITE: Permission of instructor
 This course is designed to teach the student to con-

struct 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
FORMERLY: UPH 244
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 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
FORMERLY: UPH 113
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
FORMERLY: UPH 243
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
FORMERLY: UPH 214
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,

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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 appliques; 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 appliques, 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 111 CUTTING PROCESSES THEORY (1-3T, 0-4E, 0-6M) 2-3 credits

This course covers the rules of safety and identification of shop equipment and provides the student with the skills and knowledge necessary for the safe operation of oxy-fuel cutting, carbon arc cutting and plasma arc welding. Topics include safety, proper equipment setup, and identification of oxy-fuel, carbon arc cutting and plasma arc cutting equipment. Upon completion, students should be able to identify safety hazards, gases, equipment and components, and set up equipment for proper application.

WDT 112 SHIELDED METAL ARC FILLET THEORY (1-3T, 0-4E, 0-6M) 2-3 credits

This course provides the student with instruction on safety practices and terminology in the shielded metal arc welding (SMAW) processes. Emphasis is placed on safety, welding terminology, equipment identification, setup and operation, and related information in the shielded metal arc welding process. Upon completion, students should be able to identify safety hazards and welding equipment, understand welding terminology related to SMAW, and know the proper clothing to wear while in a welding environment.

WDT 113 BLUEPRINT READING (1-3T, 0-4E, 0-6M) 2-3 credits
FORMERLY: WDT 133

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 114 GAS METAL ARC FILLET THEORY (1-3T, 0-4E, 0-6M) 2-3 credits
FORMERLY: WDT 132

This course introduces the student to the gas metal arc welding process. Emphasis is placed on safe operating practices, handling and storage of compressed gases, process principles, component identification, and base and filler metal identification. Upon completion, students should be able to identify safe operating practices and principles describing proper cylinder storage and identify base and filler metals.

WDT 151 CUTTING PROCESSES LAB (6-9M) 2-3 credits
FORMERLY: WDT 143

This course is designed to instruct students in the safe operation of oxy-fuel, plasma arc, and carbon arc cutting. Topics include safety, proper equipment and setup, and operation of oxy-fuel, plasma arc, and carbon arc cutting equipment with emphasis on straight line, curve, bevel, and gouging operation. Upon completion, students should be able to safely operate oxy-fuel, plasma arc, and carbon arc equipment and perform those operations as per AWS D1.1.

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WDT 152	<p>SHIELDED METAL ARC FILLET WELDING (9M) 3 credits PREREQUISITE: WDT 112 or Permission of instructor This course introduces the student to the proper setup and operation of the shielded metal arc welding equipment. Emphasis is placed on striking and controlling the arc, and proper fit-up for fillet joints. Upon completion, students should be able to make fillet welds in all positions using electrodes in the F3 and F4 groups in accordance with AWS D1.1.</p>	<p>groove welding of ferrous and non-ferrous metals. Emphasis is placed on safe operating practices, joint and groove design, flowmeter operation, and amperage settings for each size and type of tungsten. Upon completion, students should be able to explain safe operating practices, purpose of the various tungsten end shapes, and determine correct amperage and flow times and rates.</p>
WDT 153	<p>SHIELDED METAL ARC WELDING GROOVES (9M) 3 credits FORMERLY: WDT 191 PREREQUISITE: WDT 112 or Permission of instructor This course provides instruction and demonstration 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 size F3 and F4 group electrodes in all positions. Upon completion, students should be able to make visually acceptable groove weld joints in accordance with AWS D1.1 welding certification procedures.</p>	<p>WDT 257 SMAW CARBON PIPE LAB (9M) 3 credits FORMERLY: WDT 293 COREQUISITE: WDT 217 or Permission of instructor This course is designed to provide the student with skills in welding carbon steel pipe with the shielded metal arc weld (SMAW) process using electrodes in the F4 and F3 group. Emphasis is placed on welding pipe in the 2G, 5G and 6G positions. Upon completion, students should be able to perform shielded metal arc welding on carbon steel pipe with prescribed electrodes in the 2G, 5G, and 6G positions to the applicable code.</p>
WDT 154	<p>GAS METAL ARC LAB (9M) 3 credits FORMERLY: WDT 172 PREREQUISITE: WDT 112 or Permission of instructor This course provides a period of instruction and demonstration using the various transfer methods of gas metal arc fillet welds. Topics included are safety, equipment setup, joint design and preparation, and gas flow rates. Upon completion, students should be able to perform fillet welds with the prescribed electrodes and transfer mode in various positions.</p>	<p>WDT 266 EXPLORING METALWORKING LAB (9M) 3 credits FORMERLY: WDT 294 PREREQUISITE: WDT 226 or Permission of instructor This course provides instruction and demonstrations for both hand and power tools to help students build their own projects. Topics include tool and equipment safety, using measuring devices for layout, using hand and power tools to fabricate, and selecting the type of metal and welding process needed to build the project. Upon completion, students should be able to use safe work practices, select material and welding process, and build a project as designed in exploring metalworking theory.</p>
WDT 180	<p>SPECIAL TOPICS (1-3T) 1-3 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 agree upon between the student and the instructor.</p>	<p>WDT 267 GAS TUNGSTEN ARC GROOVE LAB (9M) 3 credits FORMERLY: WDT 211 PREREQUISITE: WDT 227 or Permission of instructor This course provides a period of instruction and demonstration with the gas tungsten arc process to produce groove welds, using both ferrous and non-ferrous metals, in all positions, according to AWS D1.1 code. Topics include safe operating principles, equipment setup, joint preparation, and selection of tungsten with emphasis placed on manipulative skills. Upon completion, students should be able to produce groove welds on ferrous and non-ferrous metals using the gas tungsten arc process according to AWS D1.1.</p>
WDT 217	<p>SMAW CARBON PIPE THEORY (1-3T, 0-4E, 0-6M) 2-3 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, joint preparation and fit-up. Upon completion, students should be able to identify pipe positions, electrodes, proper joint geometry, joint preparations, and fit-up in accordance with applicable code.</p>	<p>WDT 268 GAS TUNGSTEN ARC FILLET LAB (9M) 3 credits FORMERLY: WDT 212 PREREQUISITE: WDT 114 or 132 or Permission of Instructor This course provides a period of instruction and demonstration with the gas tungsten arc process to produce fillet welds, using both ferrous and non-ferrous metals, according to AWS code D1.1. Topics include safe operating principles, equipment setup,</p>
WDT 227	<p>GAS TUNGSTEN ARC GROOVE THEORY (1-3T, 0-4E, 0-6M) 2-3 credits FORMERLY: WDT 142 This course introduces the student to the gas tungsten arc welding process as described in AWS D1.1 for</p>	

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and correct selection of tungsten, polarity, shielding gas, and filler metals. Upon completion, students should be able to produce fillet welds on ferrous and non-ferrous metals, using the gas tungsten arc process according to AWS code D1.1.

WDT 269 BOILER TUBE LAB (9M) 3 credits
FORMERLY: WDT 292

PREREQUISITE: Permission of instructor

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 processes 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.

WDT 270 SHIELDED METAL ARC CERTIFICATION LAB (9M) 3 credits
FORMERLY: WDT 141

This course is designed to enhance skills with the shielded metal arc welding process on carbon steel plate using groove joints without backing. Emphasis is placed on joint preparation, fit-up, and welding groove joints without backing in the 1G, 2G, 3G, and 4G positions using electrodes in the F3 and F4 group. Upon completion, students should be able to perform groove welds on carbon steel plate with the prescribed electrodes in the 1G, 2G, 3G, and 4G positions in accordance with AWS D1.1 structural welding code.

WDT 281 SPECIAL TOPICS IN WELDING TECHNOLOGY (1-3T, 0-6E, 0-9M) 3 credits

This course provides specialized instruction in various areas related to the welding industry. Emphasis is placed on meeting students' needs.