

Colorado CTE Course – Scope and Sequence

Course Name	Automotive (Body) Customization		Course Details	Credit = 1.0 Prerequisite: Collision Repair and Collision Refinishing CTE Credential: CTE Transportation	
			Course = 0.50 Carnegie Unit Credit		
Course Description	Students will develop an understanding of the Automotive Customizing and Refinishing process through both theory and lab experiences. The student will be taught how to design and build customized vehicles including advanced refinishing and painting techniques. The student will learn about tools of the trade and how to correctly use them. This course is an advanced topics course and will build on the skills learned in the Collision Repair and Refinishing courses.				
Note:	This is a suggested scope and sequence for the course content. The content will work with any textbook or instructional resource. If locally adapted, make sure all essential knowledge and skills are covered.				
SCED Identification #	20116	Schedule calculation based on 60 calendar days of a 90-day semester. Scope and sequence allows for additional time for guest speakers, student presentations, field trips, remediation, or other content topics.			
All courses taught in an approved CTE program must include Essential Skills embedded into the course content. The Essential Skills Framework for this course can be found at https://www.cde.state.co.us/standardsandinstruction/essentialskills					
Instructional Unit Topic	Suggested Length of Instruction	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration
Safety		<p>Identify regulations and safety standards that are implemented within the welding profession.</p> <p>Identify materials and resources commonly used and recycled in welding.</p>	<p>The student evaluates the function and application of the tools, equipment, technologies, and materials used in welding. The student is expected to:</p> <ul style="list-style-type: none"> A) operate welding equipment according to safety standards; B) identify and properly dispose of 	<p>Accurately read, interpret, and demonstrate adherence to safety rules, including rules published by the Occupational Safety and Health Administration (OSHA) guidelines, American Society for Testing Materials; ANSI Z49.1: Safety and Welding, Cutting, and Allied Processes, And state and national code requirements. Be able to distinguish between rules and</p>	

			<p>environmentally hazardous materials used in welding;</p> <p>C) explain the importance of recycling materials used in welding;</p> <p>D) choose appropriate personal protective equipment; and</p> <p>E) evaluate skills related to health and safety in the workplace as specified by appropriate governmental regulations.</p>	<p>explain why certain rules apply.</p> <p>Complete safety test with 100 percent accuracy.</p> <p>Identify and explain the intended use of safety equipment available in the classroom. For example, demonstrate how to properly inspect, use, store, and maintain safe operating procedures with tools and equipment.</p>	
Tools		<p>Identify metal fabrication tools and equipment.</p> <p>Understand, interpret, analyze and apply units of measure, mathematics concepts, and science principles in order to solve problems in welding fabrication.</p> <p>Explore and understand various welding systems that</p>	<p>Use standard and new emerging welding tools and equipment for the purpose of completing a customized autobody product. Student is expected to:</p> <p>A) select and use appropriate welding tools, equipment, and inspection devices to manufacture</p>		

		require standard hand and machine tools.	<p>parts or products; and</p> <p>B) introduce joint preparation methods and explain how to identify joint specifications.</p> <p>The student applies academic skills to the requirements of welding. The student is expected to:</p> <p>A) apply accurate readings of measuring devices;</p> <p>B) use appropriate tools to make accurate measurements; and</p> <p>C) compute measurements such as area, surface area, volume, and perimeter.</p>		
MIG Welding		Apply technical and science principles in order to solve problems in welding fabrication.	<p>Student is expected to:</p> <p>(A) set up MIG welder and perform a seam weld, stitch weld and tack weld;</p>		

		Apply basic knowledge of using and maintaining professional welding equipment.	(B) perform a resistance spot weld.		
Custom Door Handles		Student demonstrates knowledge of custom door handle fabrication.	Student demonstrates knowledge of custom door handle fabrication. Student is expected to: (A) prepare a door panel for a handle shave; (B) prepare a panel for a recess; and (C) apply proper fillers.		
Plasma Cutting		Identify and demonstrate setting up plasma arc cutting equipment. Identify, explain, and demonstrate the proper processes, safety procedures, and fume extraction for plasma arc cutting. Demonstrate the skills required to perform various cuts with plasma arc on various materials.	The student analyzes plasma arc cutting on metals. The student is expected to: (A) use safe operating practices; (B) demonstrate knowledge of the theories of plasma arc cutting; (C) apply safe handling of compressed air supply; (D) identify components of plasma arc cutting;	Use plasma arc cutting (PAC), to cut materials for the purpose of completing a finished product. Perform straight, shaped, and beveled cutting operations using both manual and machine-guided techniques. Properly use weld-washing techniques and visually examine cut surfaces for meeting the given specifications.	

			<ul style="list-style-type: none"> E) demonstrate correct set-up procedure for plasma arc cutting; F) define cutting terms; and G) perform straight line, piercing, bevels, and shape cuts. 		
Custom Vehicle Design		Understand concepts related to designing the customization of vehicle bodywork.	<p>Understand terminology related to the designing process for custom vehicles. Student is expected to:</p> <ul style="list-style-type: none"> (A) identify vehicle categories; (B) identify vehicle models; and (C) identify roof designs. 		
Custom Panel Work		Demonstrate ability to customize a vehicle.	<p>Apply metal work techniques to customize automobile panels. Student is expected to:</p> <ul style="list-style-type: none"> (A) perform modifications to assigned panels including chopping and reinforcing; (B) correctly apply primer; and 	Fabricate and fit inserts (reinforcements) for a door panel.	

			(C) demonstrate fabrication of a cone shape panel.		
Undercoat finishes		Understand the automotive refinishing process. Select and apply undercoat finishes.	Demonstrate the application of the automotive paint refinishing process for undercoat finishes. Student is expected to: (A) understand the refinishing process; and (B) apply undercoat finishes.		
Custom Door Work		Apply metal work techniques to custom vehicle door fabrication projects.	Apply metal work techniques to customize a vehicle door/door assembly. Student is expected to: (A) demonstrate a door glass frame modification.		
Custom Roof Work		Apply metal work techniques to custom vehicle roof fabrication projects.	Apply metal work techniques to custom vehicle roof fabrication projects. Student is expected to: (A) measure and cut a roof panel; (B) identify metal shaping tools and equipment; and (C) fabricate necessary metal work and inserts.	Fabricate and fit inserts (reinforcements) of a roof panel	

