

Colorado CTE Course – Scope and Sequence

Course Name	Introduction to Ornamental Iron		Course Details	Credit= 0.5 Prerequisite: Welding Technology I CTE Credential: CTE Manufacturing	
			Course = 0.50 Carnegie Unit Credit		
Course Description	Forming, shaping, and fabrication of patio post, staircase railings, patio railings, gates, and safety in the welding trade. (This course is in direct alignment with WEL 205.)				
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 #	13209	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		Apply welding safety protocols for personal protective equipment. Operate welding equipment according to safety standards. Use health and safety practices for storing, cleaning, and maintaining welding tools, equipment, and supplies. Interpret policies, procedures, and regulations for the workplace environment, including employer and	The student applies knowledge of personal protective equipment and industry safety protocols to the tools, equipment, technologies, and materials for welding. Student is expected to: A) Follow shop safety practices. B) Maintain a clean and safe work area. C) Follow guidelines prescribed in course progress chart. D) Perform safety inspections on oxygen, acetylene and arc welding equipment.		

		employee responsibilities.	E) Perform safety inspections on shop metal processing equipment.		
Ornamental Fabrication Techniques		Understand and apply the welding knowledge to fabricate ornamental iron structures. Demonstrate knowledge of oxygen, acetylene and arc welding, gas tungsten arc welding, gas metal arc welding or shielded metal arc welding processes including setting up of equipment.	Understand and apply the welding knowledge to fabricate ornamental iron structures. Student is expected to: A) Identify common ornamental iron materials and their appropriate welding processes; B) Demonstrate oxygen, acetylene and arc welding, gas tungsten arc welding, gas metal arc welding or shielded metal arc welding processes; C) Fabricate scrolls and twist using anvil; and D) Demonstrate coloring metal with an oxy/acetylene torch.		
Project Layout		Demonstrate welding project layout procedures.	Demonstrate welding project layout procedures. Student is expected to: A) Use proper layout techniques; and		

			B) Use proper tools for material processing and layout.		
Project Drawings		Identify and use welding symbols and read detailed drawings.	Identify and use welding symbols and read detailed drawings for the fabrication of ornamental iron applications. Student is expected to: A) Obtain relevant information from pictures and basic shop drawings B) Design and interpret dimensions and notes; C) Generate shop drawing/blueprint; and D) Interpret weld symbols.		
Bill of Materials		Apply knowledge of welding processes and materials to generate a bill of materials.	Apply knowledge of welding processes and materials to generate a bill of materials. Student is expected to: A) Understand estimating concepts for metal fabricators; B) Understand basic marketing principals; C) Apply ability to design economically; and D) Generate bill of materials.		

Project Fabrication		Fabricate ornamental iron structures.	Use welding fabrication processes for the fabrication of patio post, staircase railings, patio railings, and gates. Student is expected to: A) Fabricate project using oxygen, acetylene and arc welding, gas tungsten arc welding, gas metal arc welding or shielded metal arc welding processes.		
Quality Control		Understand quality control methods and standards used in the welding industry.	Apply knowledge of quality control methods for testing and inspecting welds. Student is expected to: A) Inspect finished project per original drawing/blueprint; B) Identify surface discontinuities and suggest corrective measures; and C) Perform minor troubleshooting on arc welding equipment.		

Academic Standards Alignment

Colorado CTE courses are required to integrate academic and essential skills into course content. The following academic standards have been identified as aligned to this course and should be integrated throughout instruction.

[CO CTE Academic Standards Resources](#) (Rubrics, integration strategies, etc) [CDE Colorado Academic Standards Online](#) (Online standards lookup tool)

Reading, Writing, & Communicating

Standard 1: Oral Expression and Listening

- **Prepared Graduate 1:** Collaborate effectively as group members or leaders who listen actively and respectfully; pose thoughtful questions, acknowledge the ideas of others; and contribute ideas to further the group's attainment of an objective.

Standard 2: Reading for All Purposes .

- **Prepared Graduate 4:** Read a wide range of informational texts to build knowledge and to better understand the human experience.
- **Prepared Graduate 5:** Understand how language functions in different contexts, command a variety of word-learning strategies to assist comprehension, and make effective choices for meaning or style when writing and speaking.

Standard 3: Writing and Composition

- **Prepared Graduate 9:** Demonstrate mastery of their own writing process with clear, coherent, and error-free polished products.

Standard 4: Research Inquiry and Design

- **Prepared Graduate 10:** Gather information from a variety of sources; analyze and evaluate its quality and relevance; and use it ethically to answer complex questions.

Note: Mathematics and Science standards will be added in the future. Visit the [Colorado Academic Standards](#) page for the most current version.