

Course Title:	Welding and Metal Fabrication
Grade(s):	11th/12th

Course Description
The purpose of this course is to provide students with the opportunity to develop basic welding skills. Welding Safety, Arc Welding (SMAW), MIG Welding (GMAW), Oxy-acetylene Torch Cutting and Welding, and Plasma Cutting will be covered. Students will complete a variety of projects that will aid in mastering these skills.
Approved Curricular Materials/Textbook(s)

Unit Title	Unit Description (Include Unit Objectives)	Unit Pacing
Unit 1: Introduction to the Welding and Metal Fabrication Industry	This unit will introduce students to the field of Welding and Metal Fabrication. The unit will cover industry standards, careers, classroom procedures, expectations, and a brief overview of different welding and fabrication techniques. Students will: • Explain the difference between welding and metal fabrication. • Identify the processes involved in metal fabrication. • Explain the current state of the welding and metal fabrication industry and its projected growth. • Select a career area within welding and metal fabrication of interest and explain the education, skills, and benefits of such a career.	2 weeks
Unit 2: Welding Safety	This unit will cover welding safety. Students will: • Identify the appropriate personal protective equipment necessary for welding.	2 weeks

	• Identify hazards associated with welding. • Understand how to select appropriate ventilation sources for different welding scenarios. • Practice shop safety procedures.	
Unit 3: Metal Selection and Preparation	This unit will cover the processes of selection, layout, cut out, and assembling in relation to metal fabrication. Students will: • Demonstrate how to safely use metal chop saws, plasma cutters, bench grinders, metal grinders, hack saws, drills, tap and die sets, metal bits, and metal punches. • Select metal stock and mark it for fabrication processes. • Practice layout and assembling processes.	2 weeks
Unit 4: Shielded Metal Arc Welding	This unit will introduce the knowledge and skills necessary for shielded metal arc welding. Students will: • Demonstrate welding, both set up and striking an arc. • Evaluate bead quality. • Select appropriate electrodes. • Practice a variety of weld joints.	7 weeks
Unit 5: OxyAcetylene	This unit will cover the safety and operation of oxyacetylene welding and cutting techniques. Students will: • Identify parts of an oxyacetylene set up and their functions. • Practice safe set up and operation utilizing an oxyacetylene torch. • Practice welding and cutting processes.	3 Weeks
Unit 6: MIG	This unit will cover the safety and operation of gas metal arc welding (GMAW) or metal inert gas welding (MIG).	3 weeks

	Students will: • Demonstrate safe and appropriate set up methods. • Practice welding methods and techniques for various types of welds and joints.	
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