south dakota DEPARTMENT OF EDUCATION
Learning. Leadership. Service.

Advanced Welding Technology

Career Cluster	Manufacturing
Course Code	13208
Prerequisite(s)	Welding Technology
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Welding Technology – Advanced Welding Technology – Welding Engineering or Capstone Experience
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, internships, field trips, and industry partnerships
Industry Certifications	National Career Readiness Certificate (NCRC), https://doe.sd.gov/CTE/documents/Industry-0221.pdf
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Welding; Manufacturing Cluster Endorsement; Welding & Precision Machining Pathway Endorsement
Resources	AWS, NCCER, and Industry

Course Description
Advanced Welding provides students with opportunities to effectively perform cutting and welding applications of increasing complexity used in the advanced manufacturing industry. Proficient students will build on the knowledge and skills of the Welding Technology course while learning additional welding techniques not covered in previous courses. Specifically, students will be proficient in fundamental safety practices in welding, gas metal arc welding (GMAW) and other advanced welding and cutting processes. Upon completion of the Advanced Welding Technology course, proficient students will be prepared to complete the American Welding Society (AWS) Entry Welder qualification and certification.

Program of Study Application
Advanced Welding Technology is the second pathway course in the Manufacturing cluster, welding pathway. Welding Technology is a prerequisite for this course. The course may be followed by further dual-enrollment studies or a capstone experience.

Course Standards

AWT 1: Implement welding safety practices.

Webb Level	*Sub-indicator*
Two Skill/Concept	AWT 1.1 Identify and demonstrate general safety in accordance with government regulations, health standards, and company and/or school policy.

AWT 2: Integrate core academic concepts as used in the welding industry.

Webb Level	*Sub-indicator*
Three Strategic Thinking	AWT 2.1 Demonstrate mathematical skills related to work assignments.
Two Skill/Concept	AWT 2.2 Communicate using welding terms and definitions from American National Standards Institute (ANSI)/American Welding Society (AWS) A3.0, Standard Welding Terms and Definitions.

AWT 3: Interpret, layout, and fabricate in conformance to fabrication drawings.

Webb Level	*Sub-indicator*
Three Strategic Thinking	AWT 3.1 Interpret and apply dimensions and locations of components in fabrication drawings.
Four Extended Thinking	AWT 3.2 Layout and fabricate according to the fabrication drawing industry standards.

AWT 4: Perform other advanced cutting processes.

Webb Level	*Sub-indicator*
Two Skill/Concept	AWT 4.1 Identify and explain the safety, parts, and operation of thermal cutting equipment.
Two Skill/Concept	AWT 4.2 Prepare layouts for cutting individual parts.
Three Strategic Thinking	AWT 4.3 Perform cuts using thermal cutting processes.

AWT 5: Perform Gas Metal Arc Welding (GMAW) process.

Webb Level	*Sub-indicator*
Two Skill/Concept	AWT 5.1 Identify and understand the safety, parts, and operation of GMAW.
Two Skill/Concept	AWT 5.2 Prepare base metal for various welding processes.
Three Strategic Thinking	AWT 5.3 Demonstrate Gas Metal Arc Welding (GMAW) on steel.

AWT 6: Identify and demonstrate knowledge of the inspection of welding and cutting processes.

Webb Level	*Sub-indicator*
Three Strategic Thinking	AWT 6.1 Visually inspect a weld.
Two Skill/Concept	AWT 6.2 Examine thermally cut surfaces and edges for discontinuities.

AWT 7: Perform other advanced welding processes.

Webb Level	*Sub-indicator*
Two Skill/Concept	AWT 7.1 Identify and understand the safety, parts, and operation of another advanced welding process.
Two Skill/Concept	AWT 7.2 Prepare base metal for various welding processes.
Three Strategic Thinking	AWT 7.3 Demonstrate another advanced welding process on steel.

AWT 8: Welding technology career exploration and development.

Webb Level	*Sub-indicator*
Two Skill/Concept	AWT 8.1 Define and compare career pathways in welding technology.
Four Extended Thinking	AWT 8.2 Design a personal learning plan for career interest in welding technology.
Two Skill/Concept	AWT 8.3 Explain trends and issues in welding technology careers.

AWT 9: Apply career readiness skills in the workplace as they relate to today's society.

Webb Level	*Sub-indicator*
One Recall	AWT 9.1 Identify and demonstrate career readiness (soft skills) in the workplace.