south dakota DEPARTMENT OF EDUCATION
Learning. Leadership. Service.

Introduction to Manufacturing

Career Cluster	Manufacturing
Course Code	13001
Prerequisite(s)	None
Credit	0.5 per semester
Program of Study and Sequence	Foundation courses – Introduction to Manufacturing – entry pathway course in any of four manufacturing pathways - Capstone
Student Organization	Skills USA
Coordinating Work-Based Learning	Guest speakers, project-based learning, community outreach, 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	7-12 Technology Education; STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; Manufacturing Cluster Endorsement
Resources	South Dakota Manufacturing Website

Course Description
Introduction to Manufacturing provides entry level exposure and career exploration in the manufacturing industry. This introductory course teaches students the skills common to all manufacturing occupations such as reading technical drawings, safety, and using tools. Students will learn the process of the manufacturing industry by designing and producing a product.

Program of Study Application
Introduction to Manufacturing is a cluster course in the Manufacturing program of study. Upon completion of Introduction to Manufacturing, a student will be prepared to take an entry pathway course in any of the four manufacturing pathways: welding, machining, design/engineering, or automation.

Course Standards

IM 1: Career exploration and development.

Webb Level	*Sub-indicator*
One Recall	IM 1.1 Research the various career pathways/occupations that are available in manufacturing process/industry/business.
Four Extended Thinking	IM 1.2 Design a personal learning plan for career interest in the manufacturing cluster.
Two Skill/Concept	IM 1.3 Explain trends and issues in the manufacturing industry.

IM 2: Research various manufacturing plans/drawings.

Webb Level	*Sub-indicator*
One Recall	IM 2.1 Identify the features of a manufacturing plan or technical drawing.
One Recall	IM 2.2 Identify various measurement tools used in manufacturing.
Two Skill/Concept	IM 2.3 Utilize various measurement tools used in manufacturing with precision.
Two Skill/Concept	IM 2.4 Apply mathematical concepts to measurement techniques.

IM 3: Implement manufacturing safety practices.

Webb Level	*Sub-indicator*
Two Skill/Concept	IM 3.1 Identify and demonstrate general safety in accordance with government regulations, health standards, and company and/or school policy.
One Recall	IM 3.2 Identify ergonomic measures to prevent worker fatigue and injury.

IM 4: Apply career readiness skills in the workplace as they relate to today's society.

Webb Level	*Sub-indicator*
One Recall	IM 4.1 Identify and demonstrate career readiness (soft skills) in the workplace.

IM 5: Utilize the appropriate tools and equipment used in the manufacturing industry.

Webb Level	*Sub-indicator*
One Recall	IM 5.1 Research and understand basic manufacturing tools.
Two Skill/Concept	IM 5.2 Use basic tools and equipment common to the manufacturing processes.

IM 6: Manufacture a product.

Webb Level	*Sub-indicator*
Three Strategic Thinking	IM 6.1 Interpret or create basic technical drawings/plans.
Four Extended Thinking	IM 6.2 Develop a prototype of a product.
Four Extended Thinking	IM 6.3 Test and evaluate a product.
Four Extended Thinking	IM 6.4 Redesign product for final production.