south dakota DEPARTMENT OF EDUCATION
Learning. Leadership. Service.

Fundamental Ag Mechanical Technologies

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18401
Prerequisite(s)	Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Cluster Course – Fundamental Ag Mechanical Technologies – Ag Systems Technology or Ag Metal Fabrication – Capstone Course
Student Organization	National FFA Organization
Coordinating Work-Based Learning	Job shadowing, mentoring, internships, entrepreneurships, service learning, workplace tours, apprenticeship, school-based enterprises, Supervised Agricultural Experience (SAE)
Industry Certifications	OSHA 10 Hour Safety Certification (Construction Industry or General Industry), National Career Readiness Certificate (NCRC)
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Power Structural & Technical Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

Fundamental Ag Mechanical Technologies is offered to help students build basic knowledge and skills in the area of agricultural mechanics, along with soft skills necessary for careers in the Agriculture, Food and Natural Resources sector. Topics covered in this course include: electricity, engines and ag technology. More substantial knowledge on the individual topics comes in advanced courses such as Ag Systems Technology, Ag Metal Fabrication, and Fundamental Ag Structures. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Algebra, geometry, English and human relation skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises, industry speakers, job shadowing and field trips. This class is reinforced through the FFA and Supervised Agricultural Experience (SAE) programs, the Ag Mechanics Career Development Event, and related Proficiency Experience or Internship Project. Each student will be expected to maintain a SAE.

Program of Study Application

Fundamental Ag Mechanical Technologies is a first pathway course in the Agriculture, Food and Natural Resources Program of Study, Power Systems pathway. Fundamental Ag Mechanical Technologies is preceded by a Cluster course and is recommended to be taken prior to participation in Ag Systems Technology or Ag Metal Fabrication.

Course Standards

FAM 1: Apply safety practices in mechanical applications.

Webb Level	*Sub-indicator*
Two Skill/Concept	FAM 1.1 Explain the safe operation and servicing of machinery and equipment.
Three Strategic Thinking	FAM 1.2 Demonstrate safe operation and knowledge of ag mechanical tools.
Three Strategic Thinking	FAM 1.3 Demonstrate workplace/worksite safety procedures and protocols.

FAM 2: Identify maintenance procedures & schedules for mechanical equipment, power and agricultural technology.

Webb Level	*Sub-indicator*
Two Skill/Concept	FAM 2.1 Identify parts and explain functions of various mechanical systems.
Two Skill/Concept	FAM 2.2 Investigate common maintenance schedules and practices for equipment.
Three Strategic Thinking	FAM 2.3 Troubleshoot problems in mechanical systems.

FAM 3: Demonstrate basic skills in project planning and metal fabrication.

Webb Level	*Sub-indicator*
Three Strategic Thinking	FAM 3.1 Create designs of metal projects.
Two Skill/Concept	FAM 3.2 Demonstrate basic welding principles and techniques.
Three Strategic Thinking	FAM 3.3 Employ metal fabrication principles to create a metal project.

FAM 4: Apply electrical principles in agricultural applications.

Webb Level	*Sub-indicator*
One Recall	FAM 4.1 Recognize the components and functions of electrical systems.
Three Strategic Thinking	FAM 4.2 Demonstrate fundamental principles of electricity.

FAM 5: Investigate emerging agricultural technologies.

Webb Level	*Sub-indicator*
Two Skill/Concept	FAM 5.1 Investigate new and/or existing technology in agriculture.

FAM 6: Develop employability skills related to the Power, Structural, and Technical Systems Pathway.

Webb Level	*Sub-indicator*
Two Skill/Concept	FAM 6.1 Develop soft skills to enhance employability.

FAM 7: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

Webb Level	*Sub-indicator*
Two Skill/Concept	FAM 7.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	FAM 7.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	FAM 7.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	FAM 7.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	FAM 7.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.