south dakota DEPARTMENT OF EDUCATION
Learning. Leadership. Service.

Ag Systems Technology

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18402
Prerequisite(s)	Fundamental Ag Mechanical Technologies, Recommended: Introduction to AFNR
Credit	0.5 or 1.0 credit
Program of Study and Sequence	Fundamental Ag Mechanical Technologies – Ag Systems Technology – Capstone Experience
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 (Agricultural, 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
Technically trained employees are needed in many aspects of the agriculture power industry. This course addresses the technical and industrial skills and techniques related to Power, Structural, & Technical Systems within South Dakota, as well as address soft skills needed for careers in this area. Technology in agriculture is ever-changing and this course will address emerging technologies in our industry. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Mathematics, science, English, and human relations skills will be reinforced throughout the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. Opportunities for application of clinical and leadership skills are provided by participation in FFA activities, conferences, and skills competitions such as the Ag Mechanics Career Development Event or related proficiency award areas. Each student will be expected to maintain a Supervised Agricultural Experience (SAE) program.

Program of Study Application
Ag Systems Technology is a second pathway course in the Agriculture, Food and Natural Resources Program of Study, Power Systems pathway. Ag Systems Technology is preceded by Fundamental Ag Mechanical Technologies and would be followed by a capstone experience.

Course Standards

AST 1: Understand and use safe practices.

Webb Level	*Sub-indicator*
Two Skill/Concept	AST 1.1 Demonstrate safe use and knowledge of tools and equipment used in this area.
Two Skill/Concept	AST 1.2 Demonstrate workplace/worksite safety procedures and protocols.

AST 2: Apply engineering principles to mechanical equipment, power utilization and technology.

Webb Level	*Sub-indicator*
Two Skill/Concept	AST 2.1 Compare power generation from various energy sources.
Two Skill/Concept	AST 2.2 Investigate various properties of lubricants needed in ag mechanics.

AST 3: Apply principles of operation and maintenance to mechanical equipment, power utilization, and technology.

Webb Level	*Sub-indicator*
Two Skill/Concept	AST 3.1 Explain the importance of scheduled service routines to maintain machinery and equipment.
Two Skill/Concept	AST 3.2 Demonstrate suggested inspections on machinery and/or equipment.

AST 4: Examine principles of service and repair to mechanical and electrical equipment, power utilizations and technology.

Webb Level	*Sub-indicator*
Three Strategic Thinking	AST 4.1 Evaluate internal and/or diesel combustion engines to assess needed service and repair.
Three Strategic Thinking	AST 4.2 Investigate service and repair specifications for operating systems.
Four Extended Thinking	AST 4.3 Diagnose problems associated with operating systems.
Two Skill/Concept	AST 4.4 Explore electric motor types, operation, and maintenance.

AST 5: Analyze emerging agriculture technologies.

Webb Level	*Sub-indicator*
Two Skill/Concept	AST 5.1 Analyze how emerging agriculture technologies have affected AFNR industries.

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

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

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

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