south dakota DEPARTMENT OF EDUCATION
Learning. Leadership. Service.

Advanced Plant Science

Career Cluster	Agriculture, Food and Natural Resources
Course Code	18057
Prerequisite(s)	Fundamental Plant Science AND/OR Fundamental Horticulture, Recommended: Introduction to AFNR
Credit	0.5 credit
Program of Study and Sequence	Fundamental Plant Science – Advanced Plant Science – Ag Biotechnology – 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 (General Industry), National Career Readiness Certificate (NCRC), Commercial Pesticide Applicator Certification, Private Pesticide Applicator Certification
Dual Credit or Dual Enrollment	https://sdmylife.com/images/Approved-CTE-Dual-Credit.pdf
Teacher Certification	Agriculture Food and Natural Resources Cluster Endorsement; Plant Systems Pathway Endorsement; *Agriculture Education
Resources	

Course Description

The plant science industry is a large part of the economic structure in South Dakota, especially crop and forage production. Every corner of South Dakota is involved in the plant science field. In Advanced Plant Science, students develop the necessary knowledge, skills, habits, and attitudes for both entry-level employment and advancement within agronomy and related plant science occupations. Topics include plant anatomy, physiology, and classification, sustainability in agronomic operations, pest management, and employability skills. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Algebra, biology, English, and human relations skills will be reinforced in the course. Advanced Plant Science is reinforced through the FFA and Supervised Agricultural Experience (SAE) activities such as the Agronomy Career Development Event and related Proficiency Awards. Each student will be expected to maintain a SAE.

Program of Study Application

Advanced Plant Science is a second pathway course in the Agriculture, Food and Natural Resources Program of Study, Plant Systems pathway. Advanced Plant Science is preceded by Fundamental Plant Science and would be followed by Ag Biotechnology.

Course Standards

ADPS 1: Understand and use safe practices.

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

ADPS 2: Recognize principles of plant anatomy, classification, and physiology for the production and management of agronomic plants.

Webb Level	*Sub-indicator*
One Recall	ADPS 2.1 Classify plants according to taxonomy, life cycles, and plant use.
Three Strategic Thinking	ADPS 2.2 Investigate various genetically modified plants (GMOs) and their relationship and/or impact on the industry.
Two Skill/Concept	ADPS 2.3 Apply knowledge of seed, fruit, and vegetative parts optimal for plant reproduction.

ADPS 3: Employ the principles and practices of sustainable agriculture in a plant-based operation.

Webb Level	*Sub-indicator*
Two Skill/Concept	ADPS 3.1 Incorporate the fundamentals of plant management and sustainable agriculture.
Three Strategic Thinking	ADPS 3.2 Develop an integrated fertilizer plan for specific plants or crops.
Three Strategic Thinking	ADPS 3.3 Evaluate data to manage range and pastures.
Three Strategic Thinking	ADPS 3.4 Examine growth of a plant to determine when and how a crop should be harvested and stored.
Three Strategic Thinking	ADPS 3.5 Evaluate crop and harvest success for future planning.

ADPS 4: Analyze a pest management system.

Webb Level	*Sub-indicator*
One Recall	ADPS 4.1 Identify primary pests of plants and crops
One Recall	ADPS 4.2 Identify pesticides by formulation and use.
Three Strategic Thinking	ADPS 4.3 Develop integrated pest management strategies to manage pest populations.
One Recall	ADPS 4.4 Understand the safe handling, mixing and application of chemicals.

ADPS 5: Develop employability skills related to the Plant Systems Pathway.

Webb Level	*Sub-indicator*
Two Skill/Concept	ADPS 5.1 Develop soft skills to enhance employability.

ADPS 6: Implement an individual project for career development through a Supervised Agriculture Experience/Work based Experience.

Webb Level	*Sub-indicator*
Two Skill/Concept	ADPS 6.1 Develop an individual project plan with goals and timeline.
Two Skill/Concept	ADPS 6.2 Explore opportunities within AFNR industries.
Three Strategic Thinking	ADPS 6.3 Apply concepts of financial management appropriate to agricultural projects and personal finances.
Three Strategic Thinking	ADPS 6.4 Develop and document knowledge and skills to ensure workplace safety regarding personal health and environmental management.
Four Extended Thinking	ADPS 6.5 Research and analyze how public policy, laws, and advocacy impact agricultural systems and agricultural literacy.