New Mexico Agriculture, Food & Natural Resources Course Framework

Introduction to the Science of Agriculture (0133)

Suggested Course Length: 180 Days

AFNR Pathway: Foundational AFNR Course (Animal Systems, Plant Systems, Natural Resources, Food Products & Processing, Agriscience, Leadership Development)

Recommended Grade Level: 9-10

Instructional Design Philosophy

Introduction to the Science of Agriculture serves as a comprehensive foundational AFNR course that introduces students to agricultural leadership, SAE development, agriscience research, animal systems, plant and soil science, food science, natural resources, and agricultural communications. Students explore career opportunities across the AFNR pathways while applying scientific principles to agricultural production systems.

The SAE serves as the backbone of instruction. Students establish, implement, document, and grow an SAE throughout the year using AET. Each instructional unit contributes directly to student SAE development, career exploration, and FFA participation.

Course-at-a-Glance

Quarter	Units	Days
Q1	Units 1-3	45
Q2	Units 4-6	45
Q3	Units 7-9	45
Q4	Units 10-12	45

Unit 1: FFA Leadership Foundations

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
History and Organization of FFA	CRP.01 Career Planning and Industry Awareness	FFA Knowledge Project	National FFA Resources	Chapter Membership
FFA Opportunities	CRP.03 Leadership Development	FFA Opportunity Portfolio	FFA Manual	Degree Advancement
Officer Duties and Responsibilities	CRP.03 Professional Leadership	Officer Presentation	Chapter Officer Guides	Leadership SAE
Community Awareness	CRP.03 Civic Responsibility	Community Service Plan	FFA Program Resources	Chapter Activities

Unit Assessment

- FFA Portfolio
- Leadership Presentation
- FFA Knowledge Exam

Unit 2: SAE Development and Career Planning

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Researching SAE Opportunities	CRP.01 Career Planning & Management	SAE Research Project	SAE for All Resources	Exploratory SAE
Planning an SAE	CRP.02 Personal Responsibility	SAE Business Plan	National FFA SAE Materials	Entrepreneurship SAE
AET Recordkeeping Systems	**ABS.02.01.02.a** Identify features of tools and services used for recording and tracking AFNR business transactions. [2024 AFNR...e Document | PDF]	AET Setup Activity	AET	Recordkeeping SAE
Keeping SAE Records	**ABS.02.01.01.a** Describe accounting systems and procedures used for recordkeeping. [2024 AFNR...e Document | PDF]	Recordbook Entries	AET	Degree Applications

Unit Assessment

- Approved SAE Plan
- AET Record Book Setup
- Career Exploration Portfolio

Unit 3: Agriscience Research Methods

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Research in Agriculture	BS.01 Scientific Inquiry	Research Proposal	CASE Curriculum	Agriscience SAE
Conducting Agricultural Research	BS.01 Experimental Design	Research Experiment	Agriscience Fair Resources	Research SAE
Reporting Agricultural Research	BS.01 Scientific Communication	Research Report	Scientific Writing Guides	Agriscience Fair
Scientific Measurement	CRP.07 Technical Skills	Measurement Lab	Laboratory Tools	Research Projects

Unit Assessment

- Research Proposal
- Agriscience Investigation

Unit 4: Animal Agriculture Industries

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Animal Industry Trends	AS.01 Animal Agriculture Systems	Industry Trends Report	Industry Publications	Animal SAE
Animal Science Careers	AS.04 Career Exploration	Career Investigation	AgCareers	Career Development
Supply and Demand Concepts	ABS.01 Economic Principles	Market Analysis Activity	Market Reports	Agribusiness SAE
Futures and Government Programs	ABS.01 Economic Systems	Commodity Analysis	USDA Resources	Agricultural Economics

Unit Assessment

- Animal Industry Portfolio
- Career Investigation Project

Unit 5: Livestock Production Systems

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Beef Industry	AS.07 Animal Production Systems	Beef Industry Analysis	Beef Industry Resources	Livestock SAE
Dairy Industry	AS.07 Production Practices	Dairy Management Project	Dairy Resources	Dairy SAE
Swine Industry	AS.07 Animal Systems Management	Industry Comparison	Pork Industry Materials	Swine SAE
Sheep, Goat and Equine Industries	AS.07 Species Management	Species Evaluation Portfolio	Species Associations	Production SAE

Unit Assessment

- Livestock Industry Project
- Production Systems Comparison

Unit 6: Animal Health and Nutrition

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Animal Nutrition	AS.03 Nutrition and Feeding Systems	Feed Analysis	Feed Industry Resources	Livestock SAE
Animal Health Management	AS.05 Animal Health	Health Management Plan	Veterinary Resources	Animal Ownership SAE
Managing Diseases and Parasites	AS.05 Disease Prevention and Management	Parasite Management Project	Extension Publications	Animal Science SAE

Unit Assessment

- Animal Nutrition Project
- Animal Health Portfolio

Unit 7: Plant Science Foundations

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Plant and Soil Science Careers	PS.01 Plant Industry Applications	Career Investigation	Plant Science Resources	Plant SAE
Plant Classification	PS.02 Plant Classification	Plant Identification Collection	MyCAERT	Floriculture SAE
Plant Types and Uses	PS.02 Plant Characteristics	Plant Uses Project	Greenhouse Resources	Entrepreneurship SAE
Plant Life Cycles	PS.03 Plant Reproduction	Life Cycle Lab	Plant Science Curriculum	Production SAE

Unit Assessment

- Plant Science Portfolio
- Plant Identification Practicum

Unit 8: Plant Growth and Propagation

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Photosynthesis and Respiration	PS.02 Plant Physiology	Photosynthesis Investigation	Plant Biology Resources	Agriscience SAE
Nutrient Functions	PS.01 Plant Growth Factors	Nutrient Deficiency Study	Extension Publications	Greenhouse SAE
Sexual Propagation	PS.03 Plant Reproduction	Seed Germination Lab	Greenhouse Curriculum	Plant Production SAE
Asexual Propagation	PS.03 Plant Propagation Methods	Propagation Project	Nursery Resources	Entrepreneurship SAE

Unit Assessment

- Plant Propagation Portfolio
- Plant Growth Investigation

Unit 9: Soil Science and Conservation

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Nature of Soil	PS.01 Plant Growth Factors	Soil Analysis Lab	Soil Science Curriculum	Crop Production SAE
Soil Texture and Structure	PS.01 Soil Characteristics	Texture Analysis	Soil Testing Kits	Research SAE
Soil Profile and Water Holding Capacity	PS.01 Soil Properties	Soil Profile Project	NRCS Resources	Environmental SAE
Soil Degradation and Erosion	NRS.02 Resource Conservation	Erosion Investigation	Conservation Districts	Conservation SAE

Unit Assessment

- Soil Science Portfolio
- Soil Conservation Project

Unit 10: Conservation and Land Management

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Conservation Tillage	NRS.02 Conservation Practices	Conservation Tillage Analysis	NRCS Resources	Natural Resources SAE
Land Capability Classification	NRS.02 Resource Management	Land Capability Project	Soil Surveys	Environmental SAE
Calculating Soil Loss	NRS.02 Conservation Planning	Soil Loss Calculation	RUSLE Resources	Agriscience SAE
Environmental Impacts of Erosion	ESS.01 Ecosystem Relationships	Environmental Impact Report	Conservation Education Resources	Research SAE

Unit Assessment

- Land Management Portfolio
- Conservation Planning Project

Unit 11: Food Science and Consumer Systems

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Exploring Food Science	FPP.01 Food Systems Applications	Food Science Investigation	Food Science Resources	Food Science SAE
Food Science Benefits	FPP.02 Food Quality Systems	Product Evaluation Activity	Institute of Food Technologists	Entrepreneurship SAE
Food Systems and Consumers	FPP.01 Consumer Food Systems	Consumer Analysis	Food Industry Resources	Food Products SAE

Unit Assessment

- Food Science Portfolio
- Consumer Trends Analysis

Unit 12: Agricultural Communication Capstone

Length: 15 Days

Course Competency	AFNR Performance Indicator	Sample Measurement	Teacher Resources	SAE/FFA Connection
Introduction to Communication	CRP.04 Communication Skills	Communication Assessment	FFA LifeKnowledge	Leadership SAE
Effective Communication Techniques	CRP.04 Professional Communication	Presentation Project	Communication Resources	Public Speaking LDE
Listening Techniques	CRP.04 Communication Effectiveness	Listening Evaluation	Leadership Curriculum	Team Leadership
Persuasive Message Development	CRP.04 Advocacy and Communication	Persuasive Speech	FFA Speaking Resources	Agricultural Communications

Unit Assessment

- Persuasive Agricultural Presentation
- Communication Portfolio
- Final AFNR Pathway Reflection

SAE Backbone Model

Quarter	SAE Milestone
Q1	Establish SAE, complete AET records, and identify career interests
Q2	Develop animal systems competencies and industry awareness
Q3	Implement plant science and soil science projects
Q4	Complete pathway investigation and SAE growth portfolio

End Goal

Every student completes a documented SAE while developing foundational competencies in:

- FFA Leadership
- SAE Development
- Agriscience Research
- Animal Science
- Plant Science
- Soil Science
- Natural Resources
- Food Science
- Agricultural Communication
- Career Exploration

This course serves as New Mexico's comprehensive introductory AFNR science course and prepares students for advanced coursework in Animal Science, Plant Science, Environmental Science, Agricultural Mechanics, Agribusiness, Food Science, and Agricultural Leadership.