

8th Grade Exploring Agriculture

Agriculture

Grade(s) 8th, Duration 1 Semester, .5 Credits
Elective Course

Course Overview

A general literacy course designed to introduce and apply life skills related to one of America's basic industries - agriculture. Units of instruction will be selected from Introduction to Agriculture, Plant Science, Animals in Society, Products from Agriculture, Natural Resources and Conservation, Leadership and Personal Development, and Basic Home and Farmstead Safety and Maintenance.

Timeframe	Unit	Scope And Sequence
		Instructional Topics
2 Period(s)	Introduction to Leadership	1. Leadership and Leadership Skills 2. Communication Skills
2 Period(s)	Introduction to Careers	1. Work Ethic 2. Agriculture Careers
6 Period(s)	Exploring Animal Science	1. The Livestock Industry 2. Animal Identification 3. The Dairy Industry
7 Period(s)	Introduction to Plant Science	1. The Horticulture Industry 2. Plant Parts and Functions 3. Plant Growth 4. Plant Propagation
8 Period(s)	Exploring Forestry and Wildlife	1. The Forestry Industry 2. Natural Resources 3. Forest Dendrology 4. Wildlife and Their Habitat
8 Period(s)	Exploring Ag Mechanics	1. Importance of Ag Mechanics 2. Safety in Ag Mechanics 3. Plumbing and PVC Parts

Course Details

Unit: Introduction to Leadership

Duration: 2 Period(s)

Unit Description

This unit introduces students to personal leadership skills and documents their importance towards future careers.

Enduring Understandings (Knowledge & Skills)

1. Students will develop leadership skills, characteristics, and responsibilities.
2. Students will develop and use verbal and nonverbal communication skills.

Academic Vocabulary

- Leadership
- Confidence
- Communication skills
- Knowledge
- Motivation
- Responsibility
- Enthusiasm
- Citizenship
- Organization
- Member
- Community

Summative Assessment

Participation in activities and completion of the reflection.

Materials and Resources (optional)

see individual topics.

Topic: Leadership and Leadership Skills

Duration: 1 Period(s)

Topic Description (short)

This topic introduces students to leadership skills and their importance.

Learning Targets

What is a leader and what qualities do leaders possess?

Formative Assessment

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Participation in activities and completion of the reflection.

Materials and Resources

PowerPoint: What is a Leader?

Copies: Who is a Leader to You worksheet and Leadership Skills Activity Reflection page

Lab Activity Materials: white paper, paperclips and tape, OR balloons (15-20 per group) and tape, OR mini-paper cups, paperclips, and tape, measuring tape, stopwatch (optional)

Topic: Communication Skills

Duration: 1 Period(s)

Topic Description (short)

This topic develops communication skills, both verbal and nonverbal, and their importance.

Learning Targets

How do communication skills affect the message that is received by the listener?

Formative Assessment

Participation in the activities.

Materials and Resources

PowerPoint: Communication Skills

Copies: Drawing Bugs Activity Instructor's Reference, Words Alon Activity word cards

Activity Materials: Plain Paper, stopwatch (optional)

Unit: Introduction to Careers

Duration: 2 Period(s)

Unit Description

This unit will introduce students to various career clusters in the field of agriscience.

Enduring Understandings (Knowledge & Skills)

1. Students will identify various career clusters in the field of agriscience.
2. Students will develop work ethic and employability skills through agricultural education and leadership programs.

Academic Vocabulary

- Work Ethic
- Values
- Loyalty
- Honesty
- Trustworthiness
- Dependability
- Reliability
- Initiative
- Self-discipline
- Self-responsibility
- Teamwork
- Respect
- Confidentiality
- Cooperative
- Assertive
- Customer Service
- Continuous learning
- Mannerly behavior
- Reliable
- Punctual
- Loyal
- Cooperative
- Criticism
- Problem Solver

Summative Assessment

Ag Career Poster Project.

Materials and Resources (optional)

see individual topics.

Topic: Work Ethic

Duration: 1 Period(s)

Topic Description (short)

This topic demonstrates the importance of work ethic on future success.

Learning Targets

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Students will develop work ethic and employability skills through agriculture education and leadership programs.

Formative Assessment

The Situation Activity.

Materials and Resources

PowerPoint: Work Ethic

Copies: The Situation Activity page

Topic: Agriculture Careers

Duration: 1 Period(s)

Topic Description (short)

This topic introduces students to the agriculture career clusters and allows them to begin exploring career opportunities in agriculture.

Learning Targets

Students will identify various career clusters in the field of agriculture.

Formative Assessment

Ag Career Poster Project

Materials and Resources

PowerPoint: Agriculture Careers

Copies: Ag Career Project Poster guidelines, Ag Career Project Poster Grading Sheet

Activity Materials: several colors of poster board or bulletin board paper cut into equal sizes, scissors, glue or glue sticks, and makers, access to resource materials, textbooks, and/or the internet, old magazines.

Unit: Exploring Animal Science

Duration: 6 Period(s)

Unit Description

This unit explores the livestock industry specifically animal identification, herd health, and dairy industries impact on our daily lives.

Enduring Understandings (Knowledge & Skills)

1. Demonstrate an understanding of the area of animal science.

Academic Vocabulary

- Beef
- Pork
- Lamb
- Mutton
- Poultry
- Crossbreeds
- Purebred
- Cow-Calf
- Stocker/Backgrounder
- Feedlot
- Mother breeds
- Sire Breeds
- Farrowing Operations
- Growing Operations
- Finishing Operations
- Broilers
- Layers
- Mohair
- Light horses
- Draft horses
- Ponies
- Mule
- Contaminated
- Ear Notching
- Disinfectant
- Litter
- Dairy
- dual-purpose breeds
- Colostrum
- Selective breeding
- Silage
- BST
- Starter Culture
- Curd
- Rennet

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- Whey
- Bacterial Cultures
- Ferment

Summative Assessment

Topic activities and quizzes

Materials and Resources (optional)

see individual topics.

Topic: The Livestock Industry

Duration: 2 Period(s)

Topic Description (short)

This topic develops an understanding of the impact of the animal industry and its products on our daily lives.

Learning Targets

What would our everyday lives be like without animal products?

Formative Assessment

A test is included for this topic based off the PowerPoint and Guided Notes. The By-product Research Poster is also used to evaluate students comprehension.

Materials and Resources

PowerPoint: The Livestock Industry

Copies: The Livestock Industry Guided Notes with a graphic organizer, Animal By-Products Poster Page, The Livestock Industry Test

Activity Materials: access to computers and old magazines, several colors of poster board or bulletin board paper cut into equal sizes, scissors, glue or glue sticks, and markers.

Topic: Animal Identification

Duration: 2 Period(s)

Topic Description (short)

This topic illustrates the importance and methods of identifying individuals in the herd as it relates to animal health.

Learning Targets

How and why do we need to identify individual animals in the herd?

Formative Assessment

A test is provided for this lesson based off the PowerPoint and Guided Notes. The Ear Notching Practice Worksheet can also be used to evaluate student comprehension.

Materials and Resources

PowerPoint: Animal Identification

Copies: Animal Identification Guided Notes, Pig Ear Notching Practice worksheet, Pig Ear Notching Activity page, Animal Identification Test

Activity Materials: scissors, colored pencils or crayons, markers, tortilla shells (for activity alternative method)

Topic: The Dairy Industry

Duration: 2 Period(s)

Topic Description (short)

This topic develops an understanding of the impact of the dairy industry and its products on our daily lives.

Learning Targets

What would our everyday lives be like without dairy products?

Formative Assessment

A test is included for this lesson based off the PowerPoint and Guided Notes. The Making Ice Cream lab can be graded for completion and reflection.

Materials and Resources

PowerPoint: The Dairy Industry

Copies: The Dairy Industry Guided Notes, Making Ice Cream Lab page, The Dairy Industry Test

Activity Materials: measuring cups and spoons, milk (1 cup for every 2 students, so 1 or 2 gallons for the class), vanilla, sugar, and salt, ice (let the students crush it in their bags) quart size sealable bags, gallon size sealable freezer bags or coffee cans, duct tape or packing tape, hand towels or warm gloves, paper towels, spoons, cups, toppings (optional)

Unit: Introduction to Plant Science

Duration: 7 Period(s)

Unit Description

This unit will introduce students to horticulture as an industry, plant parts and their functions, plant growth requirements, and methods of plant propagation by either sexual or asexual reproduction.

Enduring Understandings (Knowledge & Skills)

1. Students will define and explain the horticulture industry.

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2. Students will identify plant parts and their functions.
3. Students will define methods of plant propagation either by sexual or asexual reproduction.
4. Students will identify plant growth requirements.

Academic Vocabulary

- Binomial nomenclature
- Genetics
- Pomology
- Olericulture
- floriculture
- Landscaping and Nursery
- Foliage
- Flower
- Fruit
- Leaves
- Stem
- Roots
- Seed
- Photosynthesis
- Reproduction
- Root hairs
- Secondary root
- Primary root
- Root cap
- Internode
- Node
- Stem
- Petiole
- Axillary bud
- Midrib
- Blade
- Margin
- Anther
- Style Stigma
- Petal
- Pollen
- filament
- Ovary
- Pistil
- Stamen
- Geotropism
- Phototropism
- Hydroponics
- Transpiration
- Nutrients
- Organic
- Stomata
- Propagation
- Sexual Reproduction
- Asexual Reproduction
- Vegetative Reproduction
- Runners
- Bulbs
- Tuber buds
- Grafting
- budding
- cuttings
- Tissue Culture

Summative Assessment

Written exam and research project

Materials and Resources (optional)

see individual topics.

Topic: The Horticulture Industry

Duration: 2 Period(s)

Topic Description (short)

This topic introduces students to horticulture as an industry.

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Learning Targets

What are the areas of the horticulture industry and how do they differ?

Formative Assessment

Written quiz that covers the definitions from the PowerPoint as well as a research project.

Materials and Resources

PowerPoint: The Horticulture Industry

Copies: The Horticulture Industry Guided Notes, The Horticulture Industry Test, Horticulture Plant Research Project handout

Activity Materials: references and access to the internet

Topic: Plant Parts and Functions

Duration: 2 Period(s)

Topic Description (short)

In this lesson students will identify the different parts of the plant and how each functions for the plant.

Learning Targets

Students will identify plant parts and their functions.

Formative Assessment

A test is included for this lesson based on the PowerPoint and Guided Notes. The labs are graded on completion and recording of data.

Materials and Resources

PowerPoint: Plant Parts and Functions

Copies: Plant Parts Guided Notes and Test, Seed Germination Lab page

Lab Activity Materials: seeds (soybeans or corn work well, but any will do), clear plastic cups, paper towels, potting soil, white paper and black construction paper, markers, scissors and tape

Topic: Plant Growth

Duration: 2 Period(s)

Topic Description (short)

This topic introduces students to the environmental factors that affect the growth and development of plants.

Learning Targets

What is necessary for a plant to grow and what is not essential?

Formative Assessment

The labs will be graded on participation and recording of lab information.

Materials and Resources

PowerPoint: Plant Growth

Copies: Geotropism Lab page, Phototropism Lab page

Lab Activity Materials: potting soil, seeds (soybeans), clear plastic cups, shoe boxes or other small cartons, cardboard, scissors and markers, tape, glue, and rubber bands

Topic: Plant Propagation

Duration: 1 Period(s)

Topic Description (short)

This topic will develop a students understanding of the reproduction methods for plants, both sexual and asexual.

Learning Targets

How do plants produce the next generation?

Formative Assessment

The lab activity records will be graded on completion.

Materials and Resources

PowerPoint: Plant Propagation

Copies: A Plant from a Leaf Lab page

Activity Materials: a healthy stock plant (African violet, Swedish ivy, wandering Jew, begonia, geranium), cups or small bottles (baby food jars and specimen bottles work well), construction paper, rubber bands, scissors.

Unit: Exploring Forestry and Wildlife

Duration: 8 Period(s)

Unit Description

This unit will explore the basics of forestry and wildlife management.

Enduring Understandings (Knowledge & Skills)

1. Students will define the forestry and natural resource industry.
2. Students will identify the importance of the forest.
3. Students will be able to classify and list examples of trees specific to our region.

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4. Students will explain the importance of conservation and preservation of natural resources.
5. Students will be able to describe wildlife and their habitat.

Academic Vocabulary

- Forestry
- Natural Resources
- Conservation
- Economic impact
- Products
- Recreation
- Aesthetics
- Property Value
- Air Quality
- Pollution
- Climate
- Rainwater Runoff
- Windbreaks
- Habitat
- Erosion
- Hydrology
- Renewable Resources
- Nonrenewable Resources
- Biomass
- Biodiesel
- Geothermal
- Topsoil
- Wildlife
- Ecosystems
- Recreation
- Conservation
- Noncommercial forest
- Commercial forest
- Emissions
- Producers
- Consumers
- Scavengers
- Decomposers
- Abiotic factors
- Dendrology
- Roots
- Trunk
- Crown
- Margin
- Evergreen
- Deciduous
- Simple leaf
- Compound leaf
- Alternate leaf arrangement
- Opposite leaf arrangement
- Whorled leaf arrangement
- Serrated
- Lobed
- Entire
- Shelter
- Balance
- Fragmentation
- Corridors
- Carrying Capacity

Summative Assessment

Unit Exam

Materials and Resources (optional)

see individual topics.

Topic: The Forestry Industry

Duration: 2 Period(s)

Topic Description (short)

This topic introduces students to the importance and value of forestry as an industry.

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Learning Targets

Why are natural resources and forestry important?

Formative Assessment

Products from Trees Poster.

Materials and Resources

PowerPoint: The Forestry Industry

Copies: The Forestry Industry Guided Notes, Products from Trees Poster Project page

Activity Materials: several colors of poster board or bulletin board paper cut into equal sizes, markers, access to the internet or other resource materials.

Topic: Natural Resources

Duration: 2 Period(s)

Topic Description (short)

This topic will give students hands on introduction to the concept of natural resources and the importance of conservation.

Learning Targets

Why should we conserve and preserve natural resources?

Formative Assessment

Guided notes, matching test, Natural Resource Wanted Sign.

Materials and Resources

PowerPoint: Natural Resources

Copies: Natural Resources Guided Notes, Natural Resources Test, Natural Resource Wanted Sign Project page

Activity Materials: white paper or card stock, markers.

Topic: Forest Dendrology

Duration: 2 Period(s)

Topic Description (short)

This topic will introduce students to the characteristics used to identify tree species.

Learning Targets

How do we identify trees?

Formative Assessment

Dendrology Collection

Materials and Resources

PowerPoint: Forest Dendrology

Copies: Tree Identification Sheets, Missouri Forestry Career Development Event Tree ID List

Activity Materials: tape, leaf presses OR newspaper and heavy books, access to resource materials such as *Common Trees of Missouri*, textbooks, and/or the internet.

Topic: Wildlife and Their Habitat

Duration: 2 Period(s)

Topic Description (short)

This topic will introduce students to the key characteristics of wildlife habitat requirements and to common regional wildlife species.

Learning Targets

What is wildlife and what do they need?

Formative Assessment

The Lesson of the Kaibab Deer and Wildlife Discovery Research.

Materials and Resources

PowerPoint: Wildlife and Their Habitat

Copies: Wildlife and Their Habitat Guided Notes, The Lesson of the Kaibab Deer Activity pages, Wildlife Discovery Project information pages, Georgia Junior Natural Resources Wildlife ID List

Activity Materials: rules (optional), access to resource materials, textbooks, and/or the internet, tape or glue sticks.

Unit: Exploring Ag Mechanics

Duration: 8 Period(s)

Unit Description

This unit will explore ag mechanics, safety in the ag mechanics shop, and plumbing.

Enduring Understandings (Knowledge & Skills)

1. Students will critique the area of agricultural mechanics.

Academic Vocabulary

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- Ag Mechanics
- Design
- Machinery
- Equipment
- Internal combustion engine
- Cotton Gin
- Reaper
- Elevator
- GPS/GIS
- Accidents
- Insurance Premiums
- Hazard
- Risk
- Safety
- Precaution
- Carelessness
- Personal Protective Equipment
- Plumbing
- Irrigation
- Copper
- Cast iron
- Galvanized Steel
- PBC
- Polyethylene
- Female adaptor
- Slip tee
- threaded tee
- 45 degree slip elbow
- 90 degree slip elbow
- brass spigot
- Pipe Cement
- Pipe Solvent
- Teflon Tape
- Hacksaw
- Tape measure

Summative Assessment

Graded upon completion of the lab, bill of materials, and reflection pages.

Materials and Resources (optional)

see individual topics

Topic: Importance of Ag Mechanics

Duration: 2 Period(s)

Topic Description (short)

This topic will introduce significant contributions, skills, and careers in agricultural mechanics.

Learning Targets

Why are agricultural mechanics skills valuable?

Formative Assessment

Agricultural Mechanics Inventor Research project and Experience Needed Activity

Materials and Resources

PowerPoint: Importance of Ag Mechanics

Copies: Ag Mechanics Inventor Research Activity page and Experience Needed Activity page

Activity Materials: access to computers.

Topic: Safety in Ag Mechanics

Duration: 2 Period(s)

Topic Description (short)

This topic prepares students for the lab and stresses the importance of safety and the causes of accidents.

Learning Targets

How can accidents be avoided in the agricultural mechanics laboratory?

Formative Assessment

Ag Mechanics Safety Lab Notes, Ag Mechanics Lab Safety Rules, Is it Hazardous or Is it Safe? Lab,

Materials and Resources

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PowerPoint: Safety in Ag Mechanics

Copies: Ag Mechanics Lab Safety Rules Notes pages and Is it Hazardous or Is It Safe Lab and Reflection pages

Activity Materials: 6 clear contains with caps or lids (specimen vials or baby food jars), Samples labeled as follows: 1 - maple syrup, 2 - water, 3 - glass cleaner, 4 - fruit punch, 5 - laundry detergent (powder type), 6 - cooking oil.

Topic: Plumbing and PVC Parts

Duration: 4 Period(s)

Topic Description (short)

This topic gives students hands on skills in agricultural mechanics through PVC construction.

Learning Targets

Why are plumbing skills valuable?

Formative Assessment

PVC build project, bill of materials, and reflection

Materials and Resources

PowerPoint: Plumbing and PVC Parts

Copies: PVC Build Project Guidelines pages, Bill of Materials page, Project reflection page

Activity Materials: a hose and water source, for each group - hacksaw, tape measure, sandpaper, PVC glue, solvent and Teflon tape, 12 feet of pipe, (2) 90 degree elbows, (2) 45 degree elbows, (1) slip tee, (1) threaded tee, (1) female adaptor, (1) spigot