

Introduction to AFNR Course Concepts

Unit 1 – The Circles of Agricultural Education

Agriculture Everyday

1. Agriculture and natural resource systems provide the three basic human needs: food, clothing, and shelter.
2. Accurate record keeping is important to the success of an agricultural enterprise.
3. Production of agricultural commodities occurs within specific regions of the United States.
4. Agricultural education includes learning about agriculture systems, natural resource management, science, business, communication, and leadership.

Team FFA

1. The National FFA Organization provides opportunities to build necessary life skills, such as leadership and personal character.
2. Career Development Events expose students to numerous opportunities in agriculture.

Finding Your Career Path

1. Career opportunities exist in agriculture for all levels of education in the areas of production, processing, marketing, and regulation.
2. Employability skills are essential to prepare for a successful career.
3. Agriculture provides the most career opportunities of all employment areas.
4. Supervised Agricultural Experience programs provide opportunities to explore potential career choices and develop professional career goals.

Unit 2 – Communicating Today

Listen to Me

1. People utilize multiple forms of communication.
2. Speaking and use of visual aids are tools used in communicating effectively.
3. Speeches may be informative, persuasive, or special occasion.
4. People develop goals in order to achieve their dreams.

Let's Get Together

1. Speaking and use of visual aids are tools used in communicating effectively.

2. Systematic methods of communication are needed for groups to be productive and maintain order.
3. Teamwork is essential to solving many problems.
4. Parliamentary procedures are used to conduct orderly meetings.

Unit 3 – The Science of Agriculture

Agriscience Investigators

5. Laboratory equipment has specific uses.
6. Reading and understanding lab procedures are essential to conduct a lab safely.
7. Mass, volume, temperature, and density are common laboratory measurements.
8. Proper and accurate measurement is important for laboratory investigation.
9. Scientific method is a systematic process used to solve a problem.

Principles of pH

1. pH is the measurement of the acidity and alkalinity of a substance.
2. The pH scale is 0-14 where 0 is extremely acidic, 7 is neutral, and 14 is extremely basic.
3. pH affects the health and wellbeing of organisms.

Totally Cellular

1. Animal and plant cells have many similarities, especially in regards to cell function; however, there are important structural differences between the two cell types.
2. The nucleus of an animal and plant cell is important for several life sustaining processes, such as cell division and protein synthesis.
3. DNA is genetic material that combined with protein comprises the chromosomes found inside animal and plant cell nuclei.
4. Genes are a combination of DNA segments that define animal and plant physical appearance.
5. Offspring of animals and plants derive their genetic traits from both parents.

The Order of Classification

1. Classification of people, places, and things are a basic skill used in daily life, scientific research, and the agricultural industry.
2. Objects can be classified based on their purpose, form, usefulness, and visual characteristics of anatomical or physiological similarities.
3. Dichotomous keys are a classification tool that can be used to identify objects based on their physical features.

Unit 4 – The World Around Us

Starting from the Ground Up

1. Mineral matter, air, water, and organic matter are found in different proportions within a soil and define soil quality.
2. Mineral soils consist of three different particle sizes, specifically sand, silt, and clay.
3. Geographical features and environmental factors influence the formation process of soils and impact soil quality.
4. Soil erosion results in the loss of quality top soil and is a concern in the study of mineral soils.

The Whole Soil

1. Sand, silt, and clay are three sizes of mineral particles that comprise soil texture.
2. Soil structure and soil texture are elements that affect soil function.
3. The texture, structure, and color of the each layer of soil within a profile are used to identify specific horizons.
4. Soils form in layers that have distinguishing characteristics from other layers in a soil profile.
5. Soil color can vary due to the parent material it was derived from and environmental forces that formed it.

Water World

1. The water cycle is an example of a naturally occurring system where the substance can change form and location.
2. Land topography influences the distribution of water and pollutants.
3. Pollution is caused by point and non-point sources.
4. The quality of water sources, such as streams and drinking water, can be determined by measuring factors such as temperature, pH, turbidity, dissolved oxygen, and total dissolved solids.

Living in Harmony

1. Ecosystems are an interaction between organisms and the environment in which they live.
2. Energy flows from producers (plants) to consumers (animals).
3. There is an interdependence between plants and animals.

Unit 5 – Plants and Animals

Edible Agriculture

1. Food is derived from animal and plant products.

2. Consumption trends of food have changed over time based on an increase of information on health issues and technological advances.
3. Food must be produced, transported, processed, and stored in a safe way.
4. There are many points where food can be contaminated while in route to the consumer.

All About Plants

1. Plants have roots, stems, leaves, and flowers, which are all vital to the survival of the plant.
2. Seeds require moisture and warmth for germination.
3. Plants convert the energy of the sun into usable forms.
4. Plant cells use water, oxygen, and glucose to produce energy and metabolic by-products of carbon dioxide and water.

Plant Needs

1. Production and management of plants are based upon environmental requirements.
2. The three primary nutrients, nitrogen, phosphorus, and potassium, are necessary for the healthy growth of plants.

Animals in Ag

1. Body parts of animals vary among different species and are important as reference tools for animal selection, health, and management.
2. Production and management of animals are based upon anatomical and physiological characteristics.
3. Animals have a complex set of systems that must work together.
4. Animals are selected based upon the quality and correctness of anatomical structure and productive potential.

Animal Care

1. Animals require food, shelter, and water for survival.
2. The nutrients needed by animals include protein, carbohydrates, fats, vitamins, minerals, and water and are found in many feed sources.
3. Shelter helps animals control body temperature.
4. Safe handling and restraint protect the animal and handler.
5. The production of food, fiber, and fuel sometimes creates ethical dilemmas for producers and consumers.

Unit 6 – Mechanics of Agriculture

Safety Beyond the Classroom

1. Reading and understanding shop procedures are essential to maintaining a safe work environment.
2. Emergency equipment is available and has specific uses.
3. Maintaining a clean workstation is essential for safety.
4. Machinery use requires proper knowledge and attention to keep a person safe.

The Greening of Energy

1. Consumable forms of energy are used in everyday life.
2. Agriculture contributes to alternative energy sources.
3. There are many renewable energy sources currently being used in the United States.
4. The efficiency of fuels and the amount of energy produced varies among sources.

This is My Land

1. All property is legally defined and recorded based on a standardized regulatory system.
2. There are federal, state, county, and local laws that govern how land can be used.
3. Global Positioning System (GPS) is a method used to determine an exact location of a point on the earth using a coordinate system based on longitude and latitude readings.
4. Applications of Global Positioning Systems and Geographic Information Systems are used in all disciplines of agriculture and natural resource systems to improve agricultural production efficiencies and environmental quality.

How It's Made

1. English and Metric linear measurement systems are two useful forms of measurement used every day.
2. Measurement accuracy is critical for project success.
3. Agricultural projects involve planning, design, construction, implementation, and evaluation.

Unit 7 – Looking Ahead

Your Future in Agriscience

1. Accurate record keeping is important to the success of an agricultural enterprise.
2. Agriculture plays an essential role in society and feeding the world.