Introduction to AFNR Course Concepts

Unit 1 – The Circles of Agricultural Education

Lesson 1.1 Agriculture Everyday

1. Agriculture and natural resource systems provide the three basic human needs of food, clothing, and shelter.
2. Organization and record keeping are important to the success of an agricultural business.
3. Agriculture is a broad field of study that includes agriculture systems, natural resource management, science, business, communication, and leadership.
4. Production of agricultural commodities occurs within specific regions of the United States.

Lesson 1.2 Team FFA

1. The National FFA Organization offers members many opportunities to build necessary employment and life skills, such as leadership, personal character, and career options.
2. Career Development Events (CDE) expose students to numerous opportunities for academic application in agriculture.

Lesson 1.3 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. Agriculture is a broad field that encompasses many employment areas and offers a wide array of career opportunities.
3. Employability skills, such as work ethic, timeliness, communication, and self-direction, are essential attributes for a successful career.
4. Supervised Agricultural Experiences (SAE) programs provide opportunities to explore potential career choices and develop professional career goals.

Unit 2 – Communicating Today

Lesson 2.1 Listen to Me

1. People utilize multiple forms of verbal and nonverbal communication.
2. Voice 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.

Lesson 2.2 Let's Get Together

1. People utilize multiple forms of communication in their daily lives.
2. Parliamentary procedures are used to conduct orderly meetings.
3. Speaking and use of visual aids are tools used to communicate effectively.
4. Teamwork is essential when solving many problems and completing group tasks.

Unit 3 – The Science of Agriculture

Lesson 3.1 Agriscience Investigators

1. Laboratory equipment has specific uses in scientific experiments.
2. Reading and understanding laboratory procedures are essential to conducting a laboratory experiment safely.
3. Mass, volume, temperature, and density are common laboratory measurements.
4. Proper and accurate measurement is important for laboratory investigation.
5. Scientific method is a systematic process used to solve a problem.

Lesson 3.2 Principles of pH

1. The level of pH is used to determine 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. The level of pH affects the health and well-being of organisms.

Lesson 3.3 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 a 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.

Lesson 3.4 The Order of Classification

1. Classification of people, places, and things is 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 used to identify objects based on their physical features.

Unit 4 – The World Around Us

Lesson 4.1 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.

Lesson 4.2 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 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.

Lesson 4.3 Water World

1. The water cycle is an example of a naturally occurring system in which the substance can change form and location.
2. Land topography influences the distribution of water and pollutants.
3. Water 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.

Lesson 4.4 Living in Harmony

1. Ecosystems are an interaction between organisms and the environment in which the organisms live.
2. Energy flows from producers (plants) to consumers (animals).
3. Plants and animals depend on each other for survival.

Unit 5 – Plants and Animals

Lesson 5.1 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 about 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.

Lesson 5.2 All About Plants

1. Plants have roots, stems, leaves, and flowers, which are all vital to survival.
2. Flowers, consisting of four main parts, produce seeds for reproduction.
3. Seeds require moisture and warmth for germination.
4. Plants convert raw materials using the energy of the sun into sugar and oxygen.
5. Plant cells use water, oxygen, and glucose to produce energy and metabolic by-products of carbon dioxide and water.

Lesson 5.3 Plant Needs

1. Production and management of plants are based upon environmental conditions, such as temperature.
2. Plants require adequate amounts of water for survival, growth, and development.
3. The three primary nutrients, nitrogen, phosphorus, and potassium, are necessary for the healthy growth of plants.

Lesson 5.4 Animals in Ag

1. Body parts of animals vary among different species.
2. Production and management of animals are based on anatomical and physiological characteristics.
3. Animals are selected based upon the quality and correctness of anatomical structure and productive potential.
4. Animals have a complex set of systems that must work together.

Lesson 5.5 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. Animals perceive potential dangers differently than humans.
5. The production of food, fiber, and fuel sometimes creates ethical dilemmas for producers and consumers.

Unit 6 – Mechanics of Agriculture

Lesson 6.1 Safety Beyond the Classroom

1. Understanding and following shop procedures and rules are essential to maintaining a safe work environment.
2. Emergency equipment is available and has specific uses.
3. Machinery use requires proper knowledge and attention to keep a person safe.

Lesson 6.2 The Greening of Energy

1. People depend on consumable forms of energy, such as fuel and electricity, which are used in everyday life.
2. Agricultural commodities can be converted to alternative energy sources.
3. Many renewable energy sources, such as wind, solar, and biofuels, are currently being used in the United States.
4. The efficiency of energy and the amount of energy produced varies among sources.
5. The sustainable use of fossil fuels and renewable energy sources are the basis of many issues and concerns among consumer groups.

Lesson 6.3 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.

Lesson 6.4 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. The proper use of scale is important when drafting and designing project plans.
4. Agricultural projects involve planning, design, construction, implementation, and evaluation.

Unit 7 – Looking Ahead

Lesson 7.1 Your Future in Agriscience

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