Introduction to Agriculture, Food, and Natural Resources Course Standards
Bryan High School

1. Students will understand the basics of how agriculture and agricultural businesses play a role in the United States and Nebraska economy. (NDE Standard #4)
   - Agriculture is a broad field of study that includes agriculture systems, natural resource management, science, business, communication, and leadership.
   - Agriculture and natural resource systems provide the three basic needs of food, clothing, and shelter.
   - Production of agriculture commodities occurs within specific regions of the United States.
   - Agriculture education consists of a three part model.

2. Students will display how leadership relates to agriculture, FFA, and agricultural careers.
   - The National FFA Organization offers members many opportunities to build necessary employment and life skills, such as leadership, personal character, and career options.
   - Career Development Events (CDE) expose students to numerous opportunities for academic application in agriculture.
   - There are several awards in the National FFA system that can be awarded at various levels.
   - Organization and record keeping are important to the success of an agricultural business.
   - Employability skills, such as work ethic, timeliness, communication, and self-direction, are essential attributes for a successful career.
   - Leadership and advocacy are important parts of the agricultural industry.

3. Students will relate animal, plant, food, and natural resource concepts to careers. (NDE Standard #4)
   - Career opportunities exist in agriculture for all levels of education in the areas of production, processing, marketing, and regulation.
   - Supervised Agricultural Experiences (SAE) programs provide opportunities to explore potential career choices and develop professional career goals.

4. Students will apply concepts in animal science to the animal science industry. (NDE Standard #1)
   - There are several different species of animals that serve several different purposes in the food and companion animal industries.
• Animal cells serve as the basic unit of life and are important in regulating plant growth and function.

• Body parts, nutrition, and care of animals vary among different species.

• Production and management of animals are based on anatomical and physiological characteristics.

• Animals serve as a source of food, but also provide several different by-products.

5. Students will demonstrate knowledge of the food science industry. (NDE Standard #7)

• Food is derived from animal and plant products.

• Consumption trends of food have changed over time based on an increase of information about health issues and technological advances.

• Food must be produced, transported, processed, and stored in a safe way.

• There are many points where food can be contaminated while in route to the consumer.

• Food marketing, advertising, innovation, and production are important aspects of the food industry.

6. Students will apply knowledge of plant science to activities associated with plant industries. (NDE Standard #2)

• Plant cells serve as the basic unit of life and are important in regulating plant growth and function.

• Plants have roots, stems, leaves, and flowers, which are all vital to survival.

• Flowers, consisting of four main parts, produce seeds for reproduction.

• Plants convert raw materials (water and carbon dioxide) using the energy of the sun into sugar (glucose) and oxygen.

• Plants require adequate amounts of water for survival, growth, and development and are affected by environmental conditions, such as temperature and pH.

• The three primary nutrients, nitrogen, phosphorus, and potassium, are necessary for the healthy growth of plants.

• Greenhouse management, gardening, high tunnels, floriculture, and landscape management are sectors of plant science that are used in an urban setting.
7. **Students will apply knowledge of soil, water, and energy to the management of natural resources systems. (NDE Standard #3)**

- Mineral matter, air, water, and organic matter are found in different proportions within a soil and define soil quality.
- Sand, silt, and clay are three sizes of mineral particles that comprise soil texture.
- The texture, structure, and color of each layer of soil within a profile are used to identify specific horizons and specific functions.
- Soil erosion results in the loss of quality top soil and is a concern in the study of mineral soils.
- The water cycle is an example of a naturally occurring system in which the substance can change form and location.
- Land topography influences the distribution of water and pollutants.
- 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.
- Ecosystems are an interaction (such as energy flow) between organisms and the environment in which the organisms live.
- People depend on consumable forms of energy, such as fuel and electricity, which are used in everyday life.
- Agricultural commodities can be converted to alternative energy sources.

8. **Students will follow basic safety rules and perform a science based laboratory experiment.**

- Laboratory equipment has specific uses in scientific experiments.
- Reading and understanding laboratory procedures are essential to conducting a laboratory experiment safely.
- Proper and accurate measurement is important for laboratory investigation.
- Scientific method is a systematic process used to solve problems.