AgriScience 1 and 2

Course Description:

The curriculum for this introductory electrive course is developed from Wisconsin Standards for Agriculture, Food and Natural Resources. Agriscience introduces students to the range of agricultural opportunities and the pathways of study they may pursue. Science, mathematics, reading, and writing components are woven in the context of agriculture and students will use the introductory skills and knowledge developed in this course throughout the curriculum. Student experiences will involve the study of communication, the science of agriculture, plants, animals, natural resources, and agricultural mechanics. While surveying the opportunities available in agriculture and natural resources, students will learn to solve problems, conduct research, analyze data, work in teams, and take responsibility for their work, actions, and learning. Woven throughout the course are activities to develop and improve employability skills of students through practical applications. Students will explore career and post-secondary opportunities in each area of the course. The information in this course overview outlines what students should understand and be able to do by the end of the semester/year.

Mastery Standards:

Agriscience 1

Students will think and work creatively to develop innovative solutions to problems and opportunities. (4C1)

Students will communicate and collaborate with others to accomplish tasks and develop solutions to problems and opportunities. (4C3)

Students will explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments. (NR1)

Students will consider, analyse and apply awareness in self, identify and culture to identify skills and talents. (CD1)

Agriscience 2

Students will classify, evaluate, select, and manage animals based on anatomical and physiological characteristics. (AS2)

Students will examine components of the food industry and historical development of food products and processing. (FPP1)

Students will prepare and implement a plant management plan that addresses the influence of environmental factors, nutrients, and soil on plant growth. (PS2)

Students will apply knowledge of plant classification, plant anatomy and plant physiology to the production and management of plants. (PS1)

Unit for Agriscience 1	Description of Unit and Learning Targets
Unit Title: 1: Agriculture Everyday Essential Questions: • How has agriculture made life easier? • What additional industries are related to agriculture? • How much does food cost in the United States compared to other countries? Explain your	Students will……. Learning Targets: • Determine if their basic needs are met after simulating the collection of resources during different situations. • Develop and keep an Agriscience Notebook to record and store information. • Interpret types of activities associated with

answer	agriculture from a case study about an agricultural entrepreneur. ● Research top commodities produced in the United States and determine costs of food to consumers.
Unit Title: 2 All About the FFA Essential Questions: ● Why should I participate in the FFA? ● How is FFA important to agricultural education? ● How will Career Development Events help me develop skills for a future career? ● What is an SAE?	Students will... Learning Targets: ● Explore educational and personal growth opportunities available through FFA membership. ● Compare types of dress and the role professional dress plays in success. ● Complete components of ten Career Development Events.
Unit Title: Careers and Me Essential Questions: ● What career opportunities are available in agriculture and natural resources? ● How can I use my strengths and weaknesses to help select a career? ● How can I start a Supervised Agricultural Experience (SAE) program? ● What are the benefits of a SAE and what type of SAE program is right for me? ● Why is it important to start planning my career path now?	Students will... Learning Targets: ● Investigate the career opportunities available in agriculture. ● Classify careers according to categories in agriculture. ● Develop and maintain a career portfolio following a specific format. ● Evaluate personal characteristics, strengths, and weaknesses. ● Develop a Supervised Agricultural Experience (SAE) implementation plan.
Unit Title: 4 Listen to Me Essential Questions: ● How do I initiate a conversation? ● How do I make a formal introduction of another person?	Students will... Learning Targets: ● Demonstrate verbal and non-verbal forms of communication in a charades-like game. ● Prepare and present a formal introduction. ● Prepare and present a formal introduction. ● Practice effective public speaking characteristics. ● Develop and present an informative speech.
Unit Title: 5 Lets Get Together Essential Questions: ● Why is it important to be able to communicate effectively with others? ● What does it take to be a good group or team member? ● How do I work with others to establish group expectations or norms? ● How should a group handle conflict?	Students will... Learning Targets: ● Work collaboratively to complete team building challenges. ● Use proper parliamentary procedures to voice an opinion. ● Demonstrate the proper procedures for making a main motion and an amendment. ● Develop a presentation about agricultural careers. ● Use group norming and teamwork skills while working in a group.
Unit Title: 6 Agriscience Investigators	Students will...

Essential Questions: ● Why is science important to agriculture? ● What types of data can be collected? ● What are the science process skills?	Learning Targets: ● Identify and describe the uses of common laboratory equipment. ● Use equipment to collect data for an experiment. ● Work with their classmates to develop a list of ten safety rules to follow. ● Locate and determine the purpose of emergency equipment items located in the classroom, laboratory, and shop facilities. ● Follow written procedures to complete a laboratory exercise. ● Measure distance, volume, mass, temperature, and density using the appropriate tools and scale. ● Use equipment to collect data for an experiment. ● Measure distance, volume, mass, temperature, and density using the appropriate tools and scale.
Unit Title: 7 Principles of pH Essential Questions: ● What does the pH scale represent? ● How can acids and bases be neutralized? ● How do acids and bases affect the health of living organisms? ● How can you determine the pH using cabbage?	Students will... Learning Targets: ● Determine if a substance is an acid or a base using LabQuest® and a pH sensor. ● Test the buffering ability of water and one additional substance. ● Conduct an inquiry lab on the effect of pH on plant health. ● Write a lab report based on findings of the inquiry lab.
Unit for Agriscience 2	**Description of Unit and Learning Targets**
Unit Title: 1 Totally Cellular Essential Questions: ● What is important about the nucleus of animal and plant cells? ● Why is DNA important for the development of animals and plants? ● How are genes associated with DNA? ● Why is an understanding of genes important for animal and plant production?	Students will... Learning Targets: ● Identify and label the parts of a cell including each cell organelle function. ● Determine the differences in structural parts between an animal and plant cell. ● Demonstrate the correct use of a microscope in order to prepare a microscope slide and identify the nucleus of an onion cell. ● Extract the DNA bundles from strawberry tissue for observation. ● Construct a DNA model and demonstrate how DNA replication happens in a cell. ● Identify differences in physical features of people and trace their family traits. ● Identify similarities in characteristics to trace family traits. ● Use concept mapping software to organize thoughts.
Unit Title: 2 Order and Classification Essential Questions:	Students will... Learning Targets: ● Classify objects based on their physical characteristics.

● How can several classification categories be used to describe one object? ● Why is it important to develop a classification system? ● Why is it important to know and understand the uses and purposes of objects in order to classify them?	● Categorize animals by gender and species. ● Develop a flowchart to classify 20 different items. ● Use a dichotomous key to identify specimen based on physical features.
Unit Title: 3 Living in Harmony <u>Essential Questions:</u> ● How is energy lost in transfers through the energy pyramid? ● How do plants and animals depend on each other for gas exchange? ● What are the environmental characteristics of an ecosystem? ● How are organisms in an ecosystem influenced by humans?	Students will... <u>Learning Targets:</u> ● Simulate the flow of energy in an ecosystem. ● Conduct an experiment to determine the interdependence of plants and animals. ● Complete a WebQuest researching an ecosystem. ● Develop a model and poster depicting the ecosystem they studied. ● Record key points of ecosystems presented by classmates.
Unit Title: 4 Edible Agriculture <u>Essential Questions:</u> ● Why is it important to understand how bacteria and other microorganisms cause foodborne illness? ● What preventative measures can be taken to prevent foodborne illness? ● Which preventative measures for preventing foodborne illness are the most effective? ● How does food get from a producer to a consumer?	Students will... <u>Learning Targets:</u> ● Document the plant and animal food products consumed in a twenty-four hour period. ● Determine the percentage of plant and animal food products they consume. ● Conduct an experiment to determine bacterial levels of meat samples when refrigerated, stored at room temperature, and cooked. ● Research the path a prepared food item takes from production to processing and present their findings to the class. ● Observe and record growth of bacterial cultures. ● Solve a problem related to foodborne illness outbreak.
Unit Title: 5 All About Plants <u>Essential Questions:</u> ● How does water affect the germination rate of seeds? ● How does the sun play a role in the life of a plant? ● What is the difference between photosynthesis and respiration?	Students will... <u>Learning Targets:</u> ● Identify and sketch the four basic plant parts. ● Describe the functions of plant parts. ● Construct a model depicting the parts of a complete flower. ● Conduct a germination trial to determine the germination rate of bean seeds. ● Determine the presence of starch in plants that have received different light treatments. ● Collect data on the rate of respiration and photosynthesis of plant leaves.
Unit Title: 6 Plant Needs <u>Essential Questions:</u> ● How can the maturity of plants be predicted using historical climate data? ● How are nutrient deficiency symptoms identified?	Students will... <u>Learning Targets:</u> ● Determine the relationship between water availability and turgor pressure. ● Research plant macronutrients and record the functions in plants, deficiency symptoms, and

	sources for each. ● Calculate growing degree days for two locations to determine crop maturity. ● Design and conduct an inquiry experiment on one environmental factor to investigate the optimal growth range for a plant. ● Write a lab report and develop a presentation to report their findings on environmental conditions and plant growth.
Unit Title: 7 Animals in Ag <u>Essential Questions:</u> ● How do the external parts of animals differ among species? ● How can established priorities be used when making decisions? ● What systems function together to maintain life?	Students will... <u>Learning Targets:</u> ● Study and learn the basic anatomical parts of an animal. ● Develop a poster of the external anatomy of an animal that will be used to teach others. ● Make decisions based on given priorities and criteria, and analyze objects as they compare ideal criteria. ● Evaluate a class of market hogs based on specific priorities. ● Develop a concept map of the internal body systems and their relationships.
Unit Title: 8 Animal Care <u>Essential Questions:</u> ● How can optical illusions affect my perception of items? ● What are the ethical dilemmas people eating meat might face?	Students will... <u>Learning Targets:</u> ● Research and identify the six essential nutrients and the functions of each. ● Conduct an experiment to demonstrate the effect of insulation on maintaining body heat. ● Research and identify the six essential nutrients and the functions of each. ● Classify feedstuffs according to their nutrient value. ● Conduct an experiment to demonstrate the effect of insulation on maintaining body heat. ● Draw conclusions on the perceptions of stimuli based on observations of optical illusions. ● Determine ethical options to form an opinion on the use of meat for human consumption and related environmental impact issues.