**Agriculture Education: Agriscience (HQ)**

**COURSE SYLLABUS**

**COURSE TITLE: Agriscience (HQ)**

**INSTRUCTOR:** Mr. Danny Wilson

Cumberland County High School

660 Stanley Street

Crossville, TN 38555

(931)484-9541

**COURSE DESCRIPTION:**

Agriscience is an introductory laboratory science course that prepares students for biology, subsequent science and agriculture courses, and postsecondary study. This course helps students understand the important role that agricultural science and technology serves in the 21st century. In addition, it serves as the first course for all programs of study in the Agriculture, Food and Natural Resources Cluster.

Standards in this course are aligned with Tennessee Common Core State Standards for English Language

Arts & Literacy in Technical Subjects, Tennessee Common Core State Standards in Mathematics, and

Tennessee state standards in Anatomy and Physiology, Biology I, Biology II, Chemistry I, Chemistry II,

Environmental Science, Physical Science, Physics, and Physical World Concepts, as well as the National Agriculture, Food and Natural Resources Career Cluster Content Standards. This course counts as a lab science credit toward graduation and college entrance requirements.

**Textbook:** Burton, L. DeVere, AgriScience Fundamentals and Applications, 4th Edition, ISBN: 978-14018-5962-6

**GRADING AND EVALUATION PROCEDURES:**

**Assignments Possible Points**

Quizzes 100 points each

Daily Assignments 100 points each

Tests/Exams 100 points each

Lab/Shop 100 points each

Notebooks 100 points each

**Value or Percentage of Grade**

Quizzes and Tests 40%

Daily/Lab Assignments 40%

Final Exam 20%

**GRADE DETERMINATION**

93%-100% = A

85%-92% = B

75%-84% = C

70%-74% = D

Below 70% = F

**COURSE REQUIREMENTS**

This course is designed to introduce students to Agricultural Education and Agriscience. Students are asked to do his/her own work and follow all instruction in the class for their own safety. Each student will be provided a folder that will remain in my room for daily writing assignments to be checked by me for a notebook grade at the end of each week. This folder will also house any work and tests and the student is responsible for keeping their notebook up to date at all times. Students are also expected to come to class with paper and pencil, or other materials that are necessary as deemed by me.

Each student must **TAKE** and **PASS** a Safety Exam with **100%** before they will be allowed to enter the shop or lab. Students will be introduced to and using tools and equipment in the shop or lab and safety is of the utmost importance. **This policy will be enforced at all times, no questions asked.**

**DISCIPLINE PLAN**

**Expectations**

1. Be respectful of everyone in the class at all times.
2. Bring all materials to class and be prepared to work when the bell rings.
3. Please raise your hand when you have a question or when you need to leave the room.
4. You may not leave the room unless you have a hall pass signed by me and you have also signed out on the sign-out log sheet.
5. No cell phones or other electronic devices allowed in class. These devices will be taken up and turned in to administration.
6. Stay in your seat until the bell rings.
7. No horseplay in the classroom, shop, or greenhouse at any time!
8. No student will be allowed in the shop unless instructed by me. Safety glasses will be worn at all times in the shop when working with the equipment.
9. Follow all other classroom, shop, and school board rules at all times.

**Consequences**

1. Verbal Warning
2. Phone call and/or meeting with parent or guardians
3. Report to Administration. Discipline form will be written.

**Personal Statement**

I, Mr. Wilson, will do my best to insure the safety and learning for all students. I will also try to make each class fun and exciting. Students are asked to be respectful, participate, and keep an open mind. Good behavior will be rewarded accordingly. I encourage all students to find something they enjoy and excel in. Agriculture is a worldwide industry and opportunities abound for anyone interested in any of the careers available.

**Additional Information**

Students enrolled in an agriculture class have the option of joining the National FFA Organization. The dues for the organization are $15, which includes membership and t-shirt. It is strongly encouraged that students join, where they will participate in an abundance of activities during and after school. FFA builds the foundation of premier leadership, personal growth, and career success for all of its members. For more information on FFA, you may visit http://www.ffa.org

Attached is a copy of the state standards and competencies for this course. Students/Parents are asked to review the competencies because these are the requirements that the students will be expected to learn and understand by the end of the course. If you have read and understand these standards and this syllabus, please sign below.

Agriscience Investigation and Overview

1)  Synthesize research on the historical importance and purpose of agriculture and agriculture organizations, identifying major events, opportunities and technological developments influenced by agriscience theories and practices.

2)  Identify and review general common laboratory safety procedures including but not limited to prevention and control procedures in agriscience laboratories. Incorporate safety procedures and complete safety test with 100 percent accuracy.

Agriculture and Society

3)  Gather and analyze information from multiple authoritative sources, such as the United States Bureau of Labor Statistics, United States Department of Agriculture website and Tennessee labor data, to summarize the economic impact of the agricultural industry. Describe major career trends in Tennessee, the United States, and worldwide.

4)  Determine how a Supervised Agricultural Experience (SAE) program functions as a method to apply concepts of the scientific investigation process (i.e. conducting an Agriscience Fair project). Compare and contrast the types of SAEs as related to their importance to the scientific investigation process.

5)  Conduct a research project or literature review exploring a specific social and/or political impact on the agriculture industry at the local, state, national, or international level. For example, explore how the increase in availability of genetically modified organisms has impacted crop production and the green movement. Summarize findings in an informative essay. Revise, edit or rewrite as needed to strengthen writing.

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Fundamentals of Environmental Systems

6)  Describe the biogeochemical cycles impacting the agriculture industry by creating illustrative models and informative texts for the following:

* 1. Carbon cycle
  2. Nitrogen cycle
  3. Oxygen cycle
  4. Water cycle

7)  Critique the dynamics of biomass and energy flow in ecosystems by analyzing the major components of a food chain. Analyze the structure of the relationships among the concepts of carrying capacity, species populations, and organism interactions within multiple ecosystems and natural habitats.

8)  Produce an informative essay to distinguish between types of pollution and their sources, defining and applying ecology- and conservation-specific terminology. Compare and contrast important connections between pollution and its effects on environmental conditions (i.e. water, soil and air), animal populations, and plant populations.

Fundamentals of Cell Biology

9) Compare basic plant and animal cell biology, including structure and function. Create a visual representation that identifies cellular organelles and major cell processes.

10) Compare and contrast the roles of proteins, carbohydrates, lipids, and nucleic acids as they relate to cell growth and cell reproduction.

Fundamentals of Genetics and Heredity

11) Determine the significance of and relationships between genes, chromosomes, proteins, and hereditary traits. Analyze the role of genes in determining genetic make-up, gender, and hereditary characteristics. Using systems of equations, explain the variation and distribution of genotypes and phenotypes expressed in plants and animals.

Fundamentals of Anatomy and Physiology

12) Using graphic illustrations and supporting text, identify and describe major animal body systems (skeletal, muscular, respiratory, digestive, nervous, circulatory, respiratory, and reproductive) to establish a basic knowledge of their purpose, structure, and function.

Chemistry of Animal Digestion

13) Classify the types of digestive systems in domestic animals, and compare and contrast their anatomical and physiological differences. Synthesize research on animal nutrition (using academic journals or publications from Tennessee Extension Service) to produce an informative narrative, including defining and applying nutrition specific terminology, to examine the stages of digestion and associated processes.

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14)  Use the periodic table and the atomic chart to compare differences between ionic and covalent bonding as related to digestion. Demonstrate an understanding of the interdependence of the complex chemical and biological processes involved in the digestion process including, but not limited to, the following: elements, compounds, mixtures, and acids.

15)  Research the relationship between metabolism, energy, and nutrition. Evaluate life stage and activity level to determine the nutritional needs of animals. Differentiate types of rations to maximize animal performance.

Fundamentals of Plant and Soil Science

16)  Apply concepts related to the basic cellular and biochemical processes in plants to demonstrate the following:

* 1. Create a graphic illustration of the parts and functions of plant cells
  2. Use quantitative reasoning to balance chemical equations related to plant processes
  3. Interpret the role of physics within the cohesion-tension theory and its significance

to plant life

* 1. Examine the roles of photopigments and the effects of different colors of light on

plant growth

17)  Formulate a hypothesis about the correlation between plant nutrient deficiencies and soil composition. Conduct basic soil analysis to determine the chemical elements and nutritional levels available in soils essential for plant growth. Draw conclusions about the ability of soils to meet the nutritional requirements of plants.

Reproductive Systems

18)  Research and develop illustrative models that compare and contrast the reproductive structures of plants, drawing out key differences between sexual and asexual reproduction processes.

19)  Describe the structure and function of different seed components and summarize their roles in plant reproduction and propagation.

20)  Describe the structures and functions of the male and female animal reproductive systems. Compare and contrast the differences of the reproductive systems between small and large animal species.

Principles of Power and Energy

21) Apply fundamental principles of physics as they relate to agricultural power and technology concepts in order to demonstrate the following:

1. Analyze the relationship between speed, distance, and time
2. Relate the types of simple machines to the law of machines and mechanical

advantages

1. Specify groups, sources, and forms of energy
2. Analyze the principle of heat energy and describe the way heat travels
3. Explain the law of conservation of energy
4. Explain the production of energy and relate it to the invisible light spectrum

Fundamentals of Electricity

22) Identify different methods by which electrical energy can be produced. Discuss the safety hazards involved in each method as well as prevention and control methods relevant to electrical power supplies. Justify the use of different precautions for the prevention or management of electrical hazards and evaluate the efficacy of the prevention measures.

23)  Utilize the appropriate instruments needed to calculate and measure voltage, amperage, resistance, and wattage.

Fundamentals of Engines

24)  Apply basic principles of thermodynamics to analyze the function of major components of gasoline and diesel fuel engines.

25)  Using quantitative reasoning and employing appropriate unit conversions, calculate horsepower and thermal efficiency in internal combustion engines by creating systems of equations that describe numerical relationships.

**Student Signature:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Parent Signature:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**