

Introduction to Agriculture, Food and Natural Resources
Course Syllabus 2026-2027
Lexington High School

Instructor:

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Office Hours: Tuesday and Thursday 3:45-5:00pm at the Skills Armory at 302 S Washington.

Class Purpose: The introductory course for the Agriculture, Food and Natural Resources Career Cluster provides a knowledge base and technical skills in all aspects of the industry. Learners will be exposed to a broad range of agriculture, food and natural resources careers, cluster foundation knowledge and skills, introduction to leadership development, the FFA organization and career exploration. Topics covered include horticulture, natural resource issues and mechanics. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.

This semester-length high school course introduces students to the basic scientific principles of agriculture and natural resources. Students recognize and research plant systems, animal systems, government policy, “green” technologies, agribusiness principles, and sustainability systems. In this course, students apply understanding of ecosystems and systems thinking to the management of natural resources to maximize the health and productivity of the environment, agriculture, and communities. Students also analyze community practice or policy development related to sustainability in agriculture, food, and natural resources. Finally, students apply adaptive ecosystem management to a common pool resource problem in a manner that addresses ecological, socioeconomic, and institutional contexts. The class is also a great opportunity to learn, strengthen and apply knowledge in the following areas:

- Engineering
- Problem solving
- Tool use - common and no common tools
- Physics
- Math
- Communication skills

Objectives:

Throughout the course, you will meet the following goals:

1. Learn how societies have met their need for food and other essentials throughout history
 - a. Define agriculture and the components of the agricultural industry.
 - b. Explain the scope of agriculture as it relates to land use, economic impact, and employment.
 - c. Give the characteristics of the three main areas of agricultural commodities.
 - d. Analyze the importance of the human-agriculture connection.
 - e. Describe advancements made in agricultural production systems since 10,000 BCE.
 - f. Understand the role of increasing global population on the agricultural industry.
 - g. Analyze the impact of inventions and new technology on agriculture throughout history.
 - h. Compare and contrast agriculture systems of the past to those of the present.
 - i. Speculate on new advances that will be needed by agriculture to meet global demands.

- j. Examine factors that determine the future of agriculture, food systems, and natural resources.
 - k. Explain the areas of technology that will affect the future of agriculture, food, and natural resources.
 - l. Analyze your role in the future of agriculture, food systems, and natural resources.
2. Students will build and develop leadership, communication, and meeting skills
 - a. Distinguish between types of leadership.
 - b. Explain the importance of developing personal leadership skills.
 - c. Analyze the factors of team dynamics.
 - d. Discuss the characteristics of a good leader.
 - e. Identify opportunities for personal leadership.
 3. Develop communication skills in the agricultural industry.
 - a. Analyze the components of verbal, written, and visual communication.
 - b. Describe the differences in modes of communication including intrapersonal, small group, mass media, and social media.
 - c. Understand the components of written communication.
 - d. Examine the skills required to make an effective verbal presentation.
 4. Will be able to conduct meetings in an agricultural organization
 - a. Explain the purpose for conducting meetings using parliamentary law.
 - b. Demonstrate the ability to make, discuss, and vote on topics in a formal meeting setting.
 - c. Analyze the effectiveness of a chairman in conducting a meeting.
 - d. Classify parliamentary motions based on their intent.
 5. Students will be able to explain what experiential learning is used in the agriculture industry.
 6. Students will identify an agricultural career that they may consider training in.
 7. Learn about the powers of OSHA to help ensure a safe working environment.
 8. Students will demonstrate safety protocols used a working environment.
 9. Students will explain procedures to work safely in an agricultural area.
 10. Describe scientific methods of research.
 11. Identify and apply research in agriculture, food, and natural resources.
 12. Differentiate between facts and inferences.
 13. Design a testable experiment related to an agricultural field of study.
 14. Describe the fields of science as they relate to agriculture.
 15. Explore the places where agriculture and science interact with each other.
 16. Explain the importance of using scientific principles in agriculture.
 17. Give examples of agricultural applications for scientific principles.
 18. Identify the importance of materials used in agricultural structures.
 19. Describe functional and efficient facilities for agricultural use.
 20. Identify criteria in selecting materials in agricultural construction/fabrication.
 21. Identify emerging technologies in agriculture.
 22. Explain the intended benefits of these emerging technologies.
 23. Identify current technologies at work in the agricultural industry.
 24. Explain the benefits of current agricultural technologies.
 25. Describe renewable energy sources.
 26. Describe nonrenewable energy sources.
 27. Identify energy resources at work in an agricultural business or farm.
 28. Explain the advantages and disadvantages of energy sources.
 29. Compare the efficiency of energy production from biofuels to conventional sources.
 30. Explain how biofuels are manufactured.
 31. Identify advantages and disadvantages to biofuels.
 32. Evaluate the impact of biofuels on energy production.
 33. Identify standard tools and use the proper safety procedures.

34. Use the appropriate procedures for the use and operation of specific tools and equipment.
35. Demonstrate personal safety precautions when using tools for a specific task.
36. Identify and demonstrate proper use of measurement and layout tools.
37. Identify symbols and drawing techniques used to develop plans and sketches.
38. Identify the major parts of a construction drawing.
39. Identify the source and importance of industry construction and materials standards.
40. Identify criteria in selecting materials in agricultural construction and fabrication.
41. Prepare a bill of materials to accompany plans and sketches.
42. Identify power, structural, and technical systems used in agriculture.
43. Give examples of power, structural, and technical systems in agronomy, horticulture, and nursery and landscaping.
44. Examine power, structural, and technical systems in livestock and poultry production.
45. Describe the impact of power systems in forestry and natural resources.
46. Develop project proposals and business plans.
47. Determine the appropriate financial management principles for maintaining an agricultural business.
48. Examine the principles behind accounting for financial records in agriculture.
49. Analyze business productivity based on net worth, cash flow, and return on investment calculations.
50. Differentiate between the major fields of mathematics.
51. Describe how mathematics, including calculation, measurement, and statistics is integral to agriculture.
52. Recognize the application of arithmetic, algebraic, and geometric principles in agricultural settings.
53. Use problem-solving skills to analyze and solve agricultural problems requiring basic mathematical calculations.
54. Define a local food system.
55. Explain the advantages and disadvantages of local food systems.
56. Examine methods for distributing local foods to consumers.
57. Define a global food system.
58. Explain the factors surrounding the challenge of feeding the global population.
59. Discuss the impacts of food production and distribution practices on world hunger.
60. Identify government agencies responsible for food safety.
61. Describe the food safety and processing continuum.
62. Understand common food safety and security issues.
63. Understand Hazard Analysis and Critical Control Points (HACCP).
64. Explore emerging technology in food safety. „
65. Explore career opportunities related to food safety.
66. Identify the six major nutrients and explain their role in animal feeding.
67. Determine the components of an animal ration.
68. Explain the importance of feeding high-quality feeds.
69. Compare and contrast the functions of different animal digestive systems.
70. Examine some common digestive disorders.
71. Understand the size and the scope of the beef industry.
72. Understand common terminology of the beef industry.
73. Identify the major cuts of beef. „ Describe the components of the beef industry.
74. Understand commonly used production systems in the beef industry.
75. Describe different breeds of beef cattle in the United States.
76. Understand the size and scope of the U.S. dairy industry.
77. Understand common terminology of the dairy industry.
78. Identify common dairy products. „ Describe the components of the U.S. dairy industry.
79. Understand commonly used production systems in the dairy industry.
80. Describe different breeds of dairy cattle in the United States

81. Understand the size and scope of the equine industry.
82. Define common terms used in the equine industry.
83. Describe the components of the equine industry in the United States.
84. Differentiate between different types of equine animals based on physical characteristics.
85. Identify and describe common breeds of equine animals.
86. Understand the size and scope of the U.S. poultry industry.
87. Understand common terminology of the poultry industry.
88. Describe the components of the U.S. poultry industry.
89. Understand commonly used poultry production systems. „
90. Describe different types of poultry produced in the United States.
91. Understand the size and scope of the swine industry.
92. Understand common terminology used in the swine and pork industry.
93. Describe the components of the swine industry.
94. Understand production systems in the swine industry.
95. Describe different breeds of swine in the United States
96. Understand the size and scope of the U.S. sheep industry.
97. Understand common terminology of the sheep industry.
98. Identify the major cuts of lamb and mutton.
99. Describe the components of the U.S. sheep industry.
100. Understand commonly used production systems in the sheep industry.
101. Describe different breeds of sheep in the United States.
102. Understand the size and scope of the U.S. goat industry.
103. Understand common terminology of the goat industry.
104. Describe the components of the U.S. goat industry.
105. Understand commonly used production systems in the goat industry.
106. Describe different breeds of goats in the United States.
107. Understand the size and scope of the companion animal industry.
108. Understand common terminology of the companion animal industry.
109. Describe the components of the companion animal industry. „ Describe different types of companion animals in the United States.
110. Develop basic skills for maintaining healthy pets.
111. Explore career opportunities in the companion animal industry.
112. Understand the size and the scope of the aquaculture industry.
113. Understand common terminology of the aquaculture industry.
114. Describe the components of the aquaculture industry.
115. Describe different types of fish and aquatic animals in the United States.
116. Explore career opportunities in the aquaculture industry.
117. Define nontraditional animal industries.
118. Explain how animals outside traditional livestock and companion animals play a role in agriculture.
119. Describe the production cycle of different nontraditional animal industries.
120. Differentiate between primary products and by-products.
121. Examine the portion of livestock animals that are used for primary and by-products.
122. List common uses for animal by-products.
123. Understand the nature and composition of soil and its role in plants
124. Explore plant classification and reproduction, as well as how plants deal with predators
125. Discover how farmers and governmental agencies can track farm animals to locate the source of contamination or disease
126. Study animal genetics, cloning, and the human consumption of cloned meat
127. Discuss animal husbandry, animal behavior, and the protection of animals against cruelty

128. Explore different careers related to animal care and breeding

Learning Modules

1. Agriculture and Society
2. Leadership in Agriculture
3. Agriculture as a Career
4. Agricultural Safety
5. Agriculture Science
6. Agricultural Technology
7. Agricultural Power and Engineering
8. Agricultural Mathematics
9. Importance of Food
10. Large Animal Production
11. Small Animal Production
12. Other Animal Production
13. Plant Production
14. Environmental Systems Impacting Agriculture
15. Soil and Water Management
16. Natural Resources and Recreation

Resources:

Text Book: Principles of Agriculture, Food and Natural Resources

Grading:

Test (50%) + Projects (30%) + Homework (20%) = Quarter Grade (100%)

Quarter 1 (45%) + Quarter 2 (45%) + Semester Final (10%) = Semester Grade (100%)

Late Work: Late work will have a 25% deduction each school day the assignment is late. After 4 days the assignment will not be scored and put in the gradebook as a 0%.

Classroom Expectations and Procedures:

- Come to class prepared (Charged Ipad, pencil, paper, etc.)
- Respect one another
- Listen wholeheartedly when others are speaking
- Speak with good purpose
- Be accountable for your actions
- Learn from failure

Beginning of Class:

- Place phones in backpack (No tolerance policy)
- Find your seat, take out supplies needed for class (CHARGED COMPUTER, pencil, etc.)
- Early work will be placed in Google Classroom, Open Google Classroom and answer the early work.
- When finished, sit quietly and wait for further instructions

During class:

- Actively participate in class
- Keep order
- Be respectful

End of Class:

- Clean up your area (paper on floor around you, your supplies, put extension cords away, etc.)
- Sit IN seat until the bell rings. DO NOT LINE UP AT THE DOOR!!!!

- Push in your chair and leave the room quietly