

EWHS Course Scope & Sequence

Course Title	Sustainable Agriculture				
Course Overview	<p>Sustainable Agriculture is an interdisciplinary science course that examines the environmental, economic, and social impacts of modern food production systems. As concerns about food security, climate change, environmental sustainability, and human health continue to grow, students will explore the science behind conventional and sustainable farming practices. Through the study of topics such as soil health, plant production, water conservation, pest management, organic agriculture, and food systems, students will develop the knowledge and critical thinking skills needed to evaluate agricultural challenges and propose sustainable solutions.</p>				
Unit Component	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Title	Intro to Sus. Ag	Understanding Sustainable Ecosystems/Soil Health	Water Conservation	Crop Planning & Rotation	Sustainable Livestock
Guiding or Essential Questions <i>(if applicable)</i>	How can sustainable agriculture address global challenges and create a resilient future?	<p>How can we adapt our soil management plans to build resilience in the face of environmental uncertainties?</p> <p>Supporting Questions: 1. How do different farming practices impact soil health and the overall sustainability of agricultural</p>	<p>- How can hydroponic/aquaculture systems maximize water efficiency in agriculture, and what role do these systems play in addressing global challenges related to water scarcity and food security? (NGSS Standard: HS-ESS3-3)</p> <p>- What are the different methods of water conservation in</p>	<p>1. How does crop rotation contribute to maintaining soil health and improving crop yield, and how can we design effective rotation plans that optimize resource utilization in sustainable agriculture? (NGSS Standard: HS-LS2-6)</p> <p>2. What are the impacts of different</p>	<p>1. How do sustainable livestock management practices impact the biodiversity and resilience of ecosystems in agricultural settings, and how can we promote responsible animal husbandry to support environmental sustainability? (NGSS Standard: HS-LS2-4)</p>

		<p>ecosystems? (NGSS Standard: HS-LS2-5)</p> <p>2. What are the factors that affect the carrying capacity of ecosystems and biodiversity in agricultural settings, and how can we optimize resource utilization to support long-term sustainability? (NGSS Standard: HS-LS2-2)</p> <p>3.. How can computational simulations help us model and understand the complex interactions within ecosystems and their responses to changes in management practices and climate? (NGSS Standard: HS-ESS3-4)</p> <p>4.. What role does photosynthesis and cellular respiration play in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere, and how does this impact soil health and agricultural productivity?</p>	<p>agriculture, and how do they impact water quality and availability for sustainable farming practices? (NGSS Standard: HS-ESS3-1)</p>	<p>crop rotation systems on biodiversity and pest control in agricultural ecosystems, and how can we evaluate their effectiveness in promoting long-term environmental sustainability? (NGSS Standard: HS-LS2-7)</p> <p>3. How can computational simulations help us model the complex interactions in ecosystems and predict the outcomes of various crop rotation plans in different environments? (NGSS Standard: HS-ESS3-4)</p> <p>4. What are the factors to consider when planning a crop rotation, and how do these considerations differ in different geographical regions and climates? (NGSS Standard: HS-ESS3-1)</p>	<p>2. What role does group behavior play in the survival and reproduction of livestock and other species, and how can we use this knowledge to improve livestock management practices for the long-term benefit of both animals and ecosystems? (NGSS Standard: HS-LS2-8)</p> <p>3. How can we evaluate the evidence for the role of sustainable livestock management in reducing the impacts of human activities on natural systems, and how do these practices contribute to the sustainability of human populations and biodiversity? (NGSS Standard: HS-ESS3-4)</p> <p>4. What are the ethical considerations of sustainable livestock management, and how can we address animal welfare concerns while balancing the needs of food production and</p>
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					environmental sustainability? (NGSS Standard: HS-LS2-7)
<p>Topic</p> <p>This should be the overarching theme or big idea. Brief overview of the unit.</p>	<p>Sustainable agriculture is an evolving system of practices and principles that balances environmental health, food production, and human needs to support long-term ecological stability and address global challenges.</p>	<p>Healthy soils are the foundation of sustainable agriculture and thriving ecosystems, supporting food production, biodiversity, and environmental resilience for future generations.</p>	<p>Water is a precious and limited resource, and sustainable agriculture requires efficient water management practices. Hydroponics/aquaculture, as an innovative method, demonstrates the potential for water conservation and resource optimization in agricultural production systems.</p>	<p>Crop planning and rotation are essential strategies for sustainable agriculture, optimizing yields, reducing pests and diseases, and improving soil health. Effective crop rotation practices can create resilient agroecosystems that support long-term productivity and environmental stewardship.</p>	<p>Livestock management practices significantly impact ecosystems and agricultural sustainability. Responsible and ethical animal husbandry, combined with understanding the interconnections between livestock, ecosystems, and human populations, is crucial for achieving harmony between agriculture and the environment.</p>
<p>Length</p> <p>(in weeks)</p>	2.5 weeks	3 weeks	3 weeks	2.5 weeks	2.5 weeks