

EWHS Course Scope & Sequence

Course Title	Biology				
Course Overview	<p>This course introduces students to the basic concepts of biology beginning with an introduction to the study of living organisms, their structure, function and relationship to the environment. Topics covered include: the living condition, biochemical make-up of the cell, biotechnology, genetics, evolution, and biodiversity. Students taking this course will be expected to participate in laboratory work as well as to demonstrate a high degree of motivation and interest in the sciences and an ability to complete complex assignments independently</p>				
Unit Component	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Title	Ecosystem : Interactions & Dynamics	Ecosystem: Matter and Energy	Inheritance & Variation of Traits	Natural Selection & Evolution of Populations	Common Ancestry & Speciation
Guiding or Essential Questions <i>(if applicable)</i>	<p>How do ecosystems work, and how can understanding them help us protect them?</p>	<p>What causes fires in ecosystems to burn, and how should we manage them?</p>	<p>Who gets cancer, and why?</p>	<p>How does urbanization affect nonhuman populations, and how can we reduce harmful impacts?</p>	<p>What will happen to Arctic bear populations as their environment changes?</p>

<p style="text-align: center;">Topic</p> <p style="text-align: center;">This should be the overarching theme or big idea. Brief overview of the unit.</p>	<p>Interactions among organisms</p> <p>Food webs and ecosystem dynamics</p> <p>Population changes</p> <p>Biodiversity</p> <p>Human impacts on ecosystems</p> <p>Ecosystem stability and resilience</p>	<p>Matter cycles through ecosystems.</p> <p>Energy flows through ecosystems and is not recycled.</p> <p>Photosynthesis captures and stores solar energy.</p> <p>Cellular respiration releases stored energy.</p> <p>Carbon moves among the biosphere, atmosphere, hydrosphere, and geosphere.</p> <p>Human activities and climate change can alter carbon cycling and ecosystem stability.</p> <p>Understanding matter and energy flow can help design solutions to environmental problems.</p>	<p>Traits are inherited from parents through genes.</p> <p>DNA contains the instructions for building proteins.</p> <p>Genes can have different versions (alleles), leading to variation within populations.</p> <p>Mutations can occur during DNA replication or due to environmental factors.</p> <p>Some mutations can contribute to cancer by affecting the regulation of cell growth and division.</p> <p>Both genetic inheritance and environmental influences play a role in determining traits and disease risk.</p> <p>Understanding genetics helps explain patterns of</p>	<p>Populations contain genetic variation.</p> <p>Some traits provide advantages in specific environments.</p> <p>Individuals with advantageous traits are more likely to survive and reproduce.</p> <p>Over time, populations can change through natural selection.</p> <p>Environmental changes caused by humans can alter selection pressures.</p> <p>Evolution occurs at the population level across generations.</p> <p>Biodiversity and ecosystem health can be affected by human activities.</p> <p>Scientific understanding of evolution can help guide conservation</p>	<p>All living organisms share common ancestry.</p> <p>Evidence from fossils, anatomy, embryology, and DNA supports evolutionary relationships.</p> <p>New species can arise through speciation.</p> <p>Geographic isolation can lead to the formation of new species.</p> <p>Environmental change can influence extinction, adaptation, hybridization, and speciation.</p> <p>Climate change is altering habitats and affecting species survival.</p> <p>Humans can influence whether species persist, adapt, or go extinct.</p>
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Length <i>(in weeks)</i>	8 Weeks	6 Weeks	7 Weeks	7 Weeks	7 Weeks