

Classical Magnet School  
 Course 9<sup>th</sup> Grade Biology

	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
<b>Textbook Unit</b>	Sustainability/ Ecology	Ecology	Ecology/ Cell Biology	Cell Biology	Cell Biology	Genetics	Genetics	Genetics/Evolution	Evolution	<b>Course Analysis, Synthesis and Evaluation</b>
<b>Essential Questions</b>	<i>How is scientific knowledge created and communicated?</i>  <i>How do matter and energy flow through ecosystems?</i>	<i>How is scientific knowledge created and communicated?</i>  <i>How do matter and energy flow through ecosystems?</i>	<i>How is scientific knowledge created and communicated?</i>  <i>How do matter and energy flow through ecosystems?</i>	<i>How is scientific knowledge created and communicated?</i>  <i>How are organisms structured to ensure efficiency and survival?</i>	<i>How is scientific knowledge created and communicated?</i>  <i>How are organisms structured to ensure efficiency and survival?</i>	<i>How is scientific knowledge created and communicated?</i>  <i>What processes are responsible for life's unity and diversity?</i>	<i>How is scientific knowledge created and communicated?</i>  <i>What processes are responsible for life's unity and diversity?</i>	<i>How is scientific knowledge created and communicated?</i>  <i>What processes are responsible for life's unity and diversity?</i>	<i>How is scientific knowledge created and communicated?</i>  <i>What processes are responsible for life's unity and diversity?</i>	<b>Course Analysis, Synthesis and Evaluation</b>
<b>Standards</b>	10.6 - <i>Living organisms have the capability of producing populations of unlimited size, but the environment can only support a limited number of individuals from each species</i>	D43. Describe the factors that affect the carrying capacity of the environment  D44. Explain how change in population density is affected by emigration, immigration, birth rate, and death rate, and relate these factors to the exponential growth of human population	D45. Explain how technological advances have affected the size and growth rate of human populations throughout history.	10.1- <i>Fundamental life processes depend on the physical structure and chemical activities of the cell.</i>  D27. Describe significant similarities and differences in the basic structure of plant and animal cells.  D28. Describe the general role of DNA and RNA in protein synthesis.  D29. Describe the general role of enzymes in metabolic cell functions.  D30. Explain the role of the cell membrane in supporting cell functions.	10.2- <i>Microorganisms have an essential role in life processes and cycles on Earth.</i>  D31. Describe similarities and differences between bacteria and viruses.  D32. Describe how bacterial and viral infectious diseases are transmitted, and explain the roles of sanitation, vaccination and antibiotic medications in the prevention and treatment of infectious diseases.	10.3- <i>Similarities in the chemical and structural properties of DNA in all living organisms allow the transfer of genes from one organism to another.</i>  D34. Describe, in general terms, how genetic information of organisms can be altered to make them produce new materials.  D35. Explain the risks and benefits of altering the genetic composition and cell products of existing organisms.	10.4 - <i>In sexually reproducing organisms, each offspring contains a mix of characteristics inherited from both parents</i>  D36. Explain how meiosis contributes to the genetic variability of organisms.  D37. Use the Punnett Square technique to predict the distribution of traits in mono- and di-hybrid crosses.  D38. Deduce the probable mode of inheritance of traits (eg. Recessive/dominant, sex-linked) from pedigree diagrams showing phenotypes.  D39. Describe the difference between genetic disorders and infectious disorders.	10.5- <i>Evolution and biodiversity are the result of genetic changes that occur over time in constantly changing environments.</i>  D40. Explain how the processes of genetic mutation and natural selection are related to the evolution of species.	D41. Explain how the current theory of evolution provides a scientific explanation for fossil records of ancient life forms.  D42. Describe how structural and behavioral adaptations increase the chances for organisms to survive in their environments.	

<b>Major Skills</b>	Understanding Concepts Analyzing Data Literacy Direct Investigation Evidence & Trade-Offs Communication	Understanding Concepts Analyzing Data Literacy Direct Investigation Evidence & Trade-Offs Communication	Understanding Concepts Analyzing Data Literacy Direct Investigation Evidence & Trade-Offs Communication	Understanding Concepts Analyzing Data Literacy Direct Investigation Evidence & Trade-Offs Communication	Understanding Concepts Analyzing Data Literacy Direct Investigation Evidence & Trade-Offs Communication	Understanding Concepts Analyzing Data Literacy Direct Investigation Evidence & Trade-Offs Communication	Understanding Concepts Analyzing Data Literacy Direct Investigation Evidence & Trade-Offs Communication	Understanding Concepts Analyzing Data Literacy Direct Investigation Evidence & Trade-Offs Communication	Understanding Concepts Analyzing Data Literacy Direct Investigation Evidence & Trade-Offs Communication	Understanding Concepts Analyzing Data Literacy Direct Investigation Evidence & Trade-Offs Communication	
<b>Themes/ Topics</b>	<i>How do science and technology affect the quality of our lives?</i>										
<b>Coached Projects</b>	<b>Science Fair Project</b>						A Day in Ancient Rome 9 <sup>th</sup> Grade				
<b>Seminars</b>	<ul style="list-style-type: none"> <li>• DHMO</li> <li>• Ziggy Marley &amp; Sheryl Crow</li> </ul> <i>Beautiful Mother Nature and Big Yellow Taxi</i>	Seminar: Rachel Carson <i>Silent Spring</i>  <i>Population Dynamics CAPT Lab</i>	Little Aesthete <i>Photosynthesis</i>	Thomas Hardy <i>Lives of a Cell</i>	Seminar: Enzyme CAPT Lab	Thomas Hardy <i>Heredity</i>	<i>GMO CAPT STS</i>	Charles Darwin <i>On the Origin of Species</i>			