

Planned Course: Biology	Course Number: S401	Department: Science	
Unit: Ecology	Grade Level: 9-10		
Estimated Time: 45 days	Level/Track: College Prep.	Date Approved: 08/22/2016	

PA Academic Standards	Core Concepts (in question format) • Skills/Knowledge	Activities/Strategies/Study Skills (identify some activities as remedial or enrichment activities)	Assessments (include types and topics)
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<ul style="list-style-type: none"> ▶ Bio.B.3.3.1 <ul style="list-style-type: none"> • 3.1.B.A9 ▶ Bio.B.4.1.1 <ul style="list-style-type: none"> • 4.1.4.A • 4.1.10.A • 4.4.6.A • 4.5.3.D • 4.1.7.A • 4.1.7.C ▶ Bio.B.4.1.2 <ul style="list-style-type: none"> • 4.1.7.A • 4.1.4.B • 4.1.4.C • 4.4.3.C • 4.1.3.A • 4.2.10.A • 4.4.5.C ▶ Bio.B.4.2.1 <ul style="list-style-type: none"> • 4.1.4.C • 4.1.10.C • 4.1.3.C • 4.1.5.A • 4.1.7.C • 4.1.12.C • 4.1.5.C ▶ Bio.B.4.2.3 <ul style="list-style-type: none"> • 4.1.4.B • 4.2.7.A • 4.5.4.C • 4.3.4.D • 4.1.7.B • 4.3.12.A 	<ul style="list-style-type: none"> ▶ What mechanisms do organisms use to maintain a biological balance between their internal and external environments? ▶ How do organisms on Earth interact and depend on the living and non-living things in their environment? <p>The Biosphere:</p> <ul style="list-style-type: none"> • Describe the study of ecology. • Explain how biotic and abiotic factors influence an ecosystem (terrestrial and aquatic). • Define primary producers. • Describe how consumers obtain energy and nutrients. • Trace the flow of energy through living systems. • Identify the three types of ecological pyramids. • Describe how matter cycles among the living and nonliving parts of an ecosystem. • Describe how water cycles through the biosphere. • Explain why nutrients are important in living systems. • Describe how the availability of nutrients 	<ul style="list-style-type: none"> ▶ Suggested Labs and Activities: <ul style="list-style-type: none"> • Prairie Ecosystem Gizmo • Food Web Gizmo • Food Web Construction Activity • Abiotic Factors Lab • Determining Population Size Lab • Plant Competition Lab • Rabbit Population Gizmo • Acid Rain and Seeds Lab • Ecosystems and Plant Selection Lab ▶ Scientific Article Assignments ▶ Homework / Classwork to reinforce major concepts ▶ Data Analysis ▶ Visual Quizzes ▶ Graphic Organizers / Diagrams ▶ Study Guides ▶ Inquiry-based lab activities ▶ Extension and enrichment activities and labs 	<ul style="list-style-type: none"> ▶ Formative Assessments ▶ Quizzes ▶ Honors level chapter/topic summative assessments ▶ Honors level lab Reports/Assessments ▶ Quarterly Assessment #3
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<ul style="list-style-type: none"> • 4.5.8.C • 3.1.B.A2 • 4.2.5.A • 4.4.3.C ▶ Bio.B.4.2.2 • 4.1.7.A • 4.1.10.A • 4.5.3.D • 4.5.6.D ▶ Bio.B.4.2.4 • 4.1.10.A • 4.1.7.E • 4.2.10.B • 4.3.10.B • 4.1.10.B • 4.1.10.E • 4.2.12.B • 4.5.10.B • 4.1.12.A • 4.5.10.D • 4.2.10.C • 4.5.12.B • 4.1.4.A • 4.2.8.A • 4.2.12.C • 4.5.4.C • 4.1.12.C • 4.2.10.A • 4.3.12.A • 4.5.7.C • 4.1.4.E 	<p>affects the productivity of ecosystems.</p> <p>Ecosystems and Communities:</p> <ul style="list-style-type: none"> • Define niche. • Describe the role competition plays in shaping communities. • Describe the role predation and herbivory play in shaping communities. • Identify the three types of symbiotic relationships in nature. • Describe how ecosystems recover from a disturbance. • Compare succession after a natural disturbance with succession after a human-caused disturbance. • Describe the abiotic and biotic components of the major biomes. • Describe the abiotic and biotic components of the major freshwater and marine ecosystems. <p>Populations:</p> <ul style="list-style-type: none"> • List the characteristics used to describe a population. • Identify factors that affect population growth. • Describe exponential growth. • Describe logistic growth. • Identify factors that 		
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<ul style="list-style-type: none"> • 4.2.12.A ▶ Bio.B.4.2.5 • 4.1.4.A • 4.2.10.C • 4.2.10.A • 4.4.6.B • 4.1.10.A • 4.5.3.D • 4.2.7.A • 4.4.3.C • 4.1.12.A • 4.5.5.D • 4.2.8.A • 4.4.5.C • 4.1.7.E • 4.5.6.D • 4.2.10.B • 4.5.7.B • 4.1.10.E • 4.5.10.D • 4.4.6.A • 4.5.7.C • 4.1.4.E 	<p>determine carrying capacity.</p> <ul style="list-style-type: none"> • Identify the limiting factors that depend on population density. • Identify the limiting factors that do not depend on population density. • Discuss the trend of human population growth. • Explain why population growth rates differ in countries throughout the world. • Describe human activities that can affect the biosphere. • Describe the relationship between resource use and sustainable development. • Describe how human activities affect soil and land. • Describe how human activities affect water resources. • Describe how human activities affect air resources. • Explain the concept of ecological footprint. • Identify the role of ecology in a sustainable future. 		
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