

Green Woods Charter School

K – 8

PA Academic Standards in Environment and Ecology/Science and Technology Alignment Matrix

I = Grade Standard Introduced P = Grade Standard Proficient

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
3.1 Unifying Themes									
3.1.4A Know that natural and human-made objects are made up of parts.			I	I	P				
3.1.4B Know models as useful simplifications of objects or processes.			I	I	P				
3.1.4C Illustrate patterns that regularly occur and reoccur in nature.	I	I	I	P					
3.1.4D Know that scale is an important attribute of natural and human made objects, events and phenomena.		I	I	P					
3.1.4E Recognize change in natural and physical systems.	I	I	P						
3.1.7A Explain the parts of a simple system and their relationship to each other.							I	P	

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
3.1.7B Describe the use of models as an application of scientific or technological concepts.								IP	
3.1.7C Identify patterns as repeated processes or recurring elements in science and technology.					I	I	IP	IP	
3.1.7D Explain scale as a way of relating concepts and ideas to one another by some measure.					I	IP	IP		
3.1.7E Identify change as a variable in describing natural and physical systems.							IP		
3.1.10A Discriminate among concepts of systems, subsystems, feedback and control in solving technological problems.									I
3.1.10B Describe concepts of models as a way to predict and understand science and technology.									I
3.1.10C Apply patterns as repeated processes or recurring elements in science and technology.									I
3.1.10D. Apply scale as a way of relating concepts and ideas to one another by some measure.									I

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
3.1.10E Describe patterns of change in nature, physical, and man-made systems.									—
3.2 Inquiry and Design									
3.2.4A Identify and use the nature of scientific and technological knowledge.	I	I	I	P	P				
3.2.4B Describe objects in the world using the five senses.	I	I			P				
3.2.4C Recognize and use the elements of scientific inquiry to solve problems.	I	I	I	P	P				
3.2.4D Recognize and use the technological design process to solve problems.		I			P				
3.2.7A Explain and apply scientific and technological knowledge.						IP	IP	IP	IP
3.2.7B Apply process knowledge to make and interpret observations.						IP	IP	IP	IP

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
3.2.7C Identify and use the elements of scientific inquiry to solve problems.						IP	IP	IP	IP
3.2.7D Know and use the technological design process to solve problems.						IP	IP	IP	IP
3.2.10 A Apply knowledge and understanding about the nature of scientific and technological knowledge.									I
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.									I
3.2.10C Apply the elements of scientific inquiry to solve problems.									I
3.2.10D Identify and apply the technological design process to solve problems.									I
3.3 Biological Sciences									
3.3.4A Know the similarities and differences of living things.	I	I	I	P	P				

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
3.3.4B Know that living things are made up of parts that have specific functions.	I	I	I	IP	P				
3.3.4C Know that characteristics are inherited and, thus, offspring closely resemble their parents.	I	I		I	P				
3.3.4D Identify changes in living things over time.		I	I	I	P				
3.3.7A Describe the similarities and differences that characterize diverse living things.								IP	
3.3.7B Describe the cell as the basic structural and functional unit of living things.								IP	
3.3.7C Know that every organism has a set of genetic instructions that determines its inherited traits.								IP	
3.3.7D Explain basic concepts of natural selection.								IP	
3.3.10A Explain the structural and functional similarities and differences found among living things.									I

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
3.3.10B Describe and explain the chemical and structural basis of living organisms.									
3.3.10C Describe how genetic information is inherited and expressed.									
3.3.10D Explain the mechanisms of the theory of evolution.									
3.4 Physical Science, Chemistry and Physics									
3.4.4A Recognize basic concepts about the structure and properties of matter.	I	I			P				
3.4.4B Know basic energy types, sources and conversions.			I		P				
3.4.4C Observe and describe different types of force and motion.			IP						
3.4.4D Describe the composition and structure of the universe and the earth's place in it.	I		I	P					

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
3.4.7A Describe concepts about the structure and properties of matter.							IP		
3.4.7B Relate energy sources and transfers to heat and temperature.							IP		
3.4.7C Identify and explain the principles of force and motion.							IP		
3.4.7D Describe essential ideas about the composition and structure of the universe and the earth's place in it.							IP		
3.4.10A Explain concepts about the structure and properties of matter.									
3.4.10B Analyze energy sources and transfers of heat.									I
3.4.10C Distinguish among the principles of force and motion.									
3.4.10D Explain essential ideas about the composition and structure of the universe.									

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3.5 Earth Sciences									
3.5.4A Know basic landforms and earth history.		I	I	I	P				
3.5.4B Know types and uses of earth materials.		I		P					
3.5.4C Know basic weather elements.	I	I	P						
3.5.4D Recognize the earth's different water resources.		I			P				
3.5.7A Describe earth features and processes.						IP	IP	IP	
3.5.7B Recognize earth resources and how they affect everyday life.						IP	IP	IP	
3.5.7C Describe basic elements of meteorology.						IP			

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
3.5.7D Explain the behavior and impact of the earth's water systems.						IP	IP		
3.5.10A Relate earth features and processes that change the earth.									I
3.5.10B Explain sources and uses of earth's resources.									I
3.5.10C Interpret meteorological data.									
3.5.10D Assess the value of water as a resource.									I
3.6 Technology Education									
3.6.4A Know that biotechnologies relate to propagating, growing, maintaining, adapting, treating and converting. <i>(PE will cover c)</i>	I		IP	P					
3.6.4B Know that information technologies involve encoding, transmitting, receiving, storing, retrieving and decoding. <i>(Tech. Ed.)</i>	I	I	I	I	P				

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
3.6.4C Know physical technologies of structural design, analysis and engineering, finance, production, marketing, research and	IP	IP	IP	IP					
3.6.7A Explain biotechnologies that relate to related technologies of propagating, growing, maintaining, adapting, treating and converting.							IP		
3.6.7B Explain information technologies of encoding, transmitting, receiving, storing, retrieving and decoding.						IP	IP	IP	IP
3.6.7C Explain physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural							IP		
3.6.10A Apply biotechnologies that relate to related technologies of propagating, growing, maintaining, adapting, treating and converting.									—
3.6.10B Apply knowledge of information technologies of encoding, transmitting, receiving, storing, retrieving and decoding.									—
3.6.10C Apply physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural									—
3.7 Technological Devices									

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
3.7.4A Explore the use of basic tools, simple materials and techniques to safely solve problems.	I	I	I	P					
3.7.4B Select appropriate instruments to study materials.	I	I	I	P					
3.7.4C Identify basic computer operations and concepts. (Tech. Ed.)	I	I	I	I	P				
3.7.4D Use basic computer software. (Tech. Ed.)	I	I	I	I	P				
3.7.4E Identify basic computer communications systems. (Tech. Ed.)	I	I	I	I	P				
3.7.7A Describe the safe and appropriate use of tools, materials and techniques to answer questions and solve problems.						IP	IP	IP	IP
3.7.7B Use appropriate instruments and apparatus to study materials.						IP	IP	IP	IP
3.7.7C Explain and demonstrate basic computer operations and concepts.						IP	IP	IP	IP

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3.7.7D Apply computer software to solve specific problems.						IP	IP	IP	IP
3.7.7E Explain basic computer communications systems.						IP	IP	IP	IP
3.7.10A Identify and safely use a variety of tools, basic machines, materials and techniques to solve problems and answer									—
3.7.10B Apply appropriate instruments and apparatus to examine a variety of objects and processes.									—
3.7.10C Apply basic computer operations and concepts.									—
3.7.10D Utilize computer software to solve specific problems.									—
3.7.10E Apply basic computer communications systems.									—
3.8 Science, Technology and Human Endeavors									

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3.8.4A Know that people select, create and use science and technology and that they are limited by social and physical restraints.		I	P						
3.8.4B Know how human ingenuity and technological resources satisfy specific human needs and improve the quality of life.	I	I	P						
3.8.4C Know the pros and cons of possible solutions to scientific and technological problems in society.		I	P						
3.8.7A Explain how sciences and technologies are limited in their effects and influences on society.						IP	IP		
3.8.7B Explain how human ingenuity and technological resources satisfy specific human needs and improve the quality of life.								IP	
3.8.7C Apply the pros and cons of applying technological and scientific solutions to address problems and the effect upon society.							IP		
3.8.10A Analyze the relationship between societal demands and scientific and technological enterprises.									I
3.8.10B Analyze how human ingenuity and technological resources satisfy specific human needs and improve the quality of life.									I

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3.8.10C Evaluate possibilities, consequences and impacts of scientific and technological solutions.									—
4.1 Watersheds and Wetlands									
4.1.4A Identify various types of water environments.	—	—	—	P	P				
4.1.4B Explain the differences between moving and still water.	—	—	P	P					
4.1.4C Identify living things found in water environments.		—		P	P				
4.1.4D Identify a wetland and the plants and animals found there.		—			P				
4.1.4E Recognize the impact of watersheds and wetlands on animals and plants.		—			P				
4.1.7A Explain the role of the water cycle within a watershed.						IP	IP		

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4.1.7B Understand the role of the watershed.						IP			
4.1.7C Explain the effects of water on the life of organisms in a watershed.						IP	IP	IP	
4.1.7D Explain and describe characteristics of a wetland.						IP	IP		
4.1.7E Describe the impact of watersheds and wetlands on people.						IP	IP		
4.1.10A Describe changes that occur from a stream's origin to its final outflow.									—
4.1.10B Explain the relationship among landforms, vegetation and the amount and speed of water.									—
4.1.10C Describe the physical characteristics of a stream and determine the types of organisms found in aquatic environments.									—
4.1.10D Describe the multiple functions of wetlands.									—

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4.1.10E Identify and describe natural and human events on watersheds and wetlands.									—
4.2 Renewable and Nonrenewable Resources									
4.2.4A Identify needs of people.	I	I	I	I	P				
4.2.4B Identify products derived from natural resources.	I		I	P					
4.2.4C Know that some natural resources have limited life spans.	I	I	I	P					
4.2.4D Identify by-products and their use of natural resources.	I	I	P	P					
4.2.7A Know that raw materials come from natural resources.							IP		
4.2.7B Examine the renewability of resources.							IP		

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4.2.7C Explain natural resource distribution.							P		
4.2.7D Describe the role of recycling and waste management.							P		
4.2.10A Explain the renewable and nonrenewable resources supply energy and materials.									I
4.2.10B Evaluate factors affecting availability of natural resources.									I
4.2.10C Analyze how man-made systems have impacted the management and distribution of natural resources.									I
4.2.10D Explain different management alternatives involved in recycling and solid waste management.									I
4.3 Environmental Health									
4.3.4A Know that plants, animals and humans are dependent on air and water.	I	I	P		P				

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4.3.4B Identify how human actions affect environmental health.	—	—	—		P				
4.3.4C Understand that the elements of natural systems are independent.		—	—	—	P				
4.3.7A Identify environmental health issues.						IP			
4.3.7B Describe how human actions affect the health of the environment.						IP	IP		
4.3.7C Explain biological diversity.								IP	
4.3.10A Describe environmental health issues.									—
4.3.10B Explain how multiple variables determine the effects of pollution on environmental health, natural processes and									—
4.3.10C Explain biological diversity as an indicator of a healthy environment.									—

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4.4 Agriculture and Society									
4.4.4A Know the importance of agriculture to humans.	I			P					
4.4.4B Identify the role of the sciences in Pennsylvania agriculture.	I			P					
4.4.4C Know that food and fiber originate from plants and animals.	I			P					
4.4.4D Identify technology and energy use associated with agriculture.	I			P					
4.4.7A Explain society's standard of living in relation to agriculture.							IP		
4.4.7B Investigate how agricultural science has recognized the various soil types found in Pennsylvania.						IP			
4.4.7C Explain agricultural systems' use of natural and human resources.						I	I	P	

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4.4.7D Explain the improvement of agricultural production through technology.							—	P	
4.4.10A Describe the importance of agriculture to society.									—
4.4.10B Assess the influence of agricultural science on farming practices.									—
4.4.10C Explain the functions of the components of the food and fiber system.									—
4.4.10D Analyze the efforts of increased efficiency in agriculture through technology.									—
4.5 Integrated Pest Management									
4.5.4A Know types of pests.		I	P						
4.5.4B Explain pest control.		I	P						

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4.5.4C Understand society's need for integrated pest management.		I	U						
4.5.7A Explain benefits and harmful effects of pests.								IP	
4.5.7B Explain how pest management affects the environment.								IP	
4.5.7C Explain various integrated pest management practices used in society.								IP	
4.5.10A Identify similar classifications of pests that may or may not have similar effects on different regions.									I
4.5.10B Analyze health benefits and risks associated with integrated pest management.									I
4.5.10C Determine the effects of integrated pest management practices on society over time.									I
4.6 Ecosystems and Their Interactions									

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	5th Grade Earth Science	6th Grade Physical Science	7th Grade Life Science	8th Grade Environmental Science
4.6.4A Understand that living things are dependent on nonliving things in the environment for survival.	I	I	I	P	P				
4.6.4B Understand the concept of cycles.		I	I	I	P				
4.6.4C Identify how ecosystems change over time.		I	I	P	P				
4.6.7A Explain the flows of energy and matter from organism to organism within an ecosystem.						I	I	P	
4.6.7B Explain the concepts of cycles.						IP		IP	
4.6.7C Explain how ecosystems change over time.								P	
4.6.10A Explain the biotic and abiotic components of an ecosystem and their interaction.									I
4.6.10B Explain how cycles affect the balance in an ecosystem.									I

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4.6.10C Analyze how ecosystems change over time.									—
4.7 Threatened, Endangered and Extinct Species									
4.7.4A Identify differences in living things.	I	P	P	P	P				
4.7.4B Know that adaptations are important for survival.		P	P	P	P				
4.7.4C Define and understand extinction.		I	I	I	P				
4.7.7A Describe diversity of plants and animals in ecosystems.								IP	
4.7.7B Explain how species of living organisms adapt to their environment.								IP	
4.7.7C Explain natural or human actions in relation to the loss of species.								IP	

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4.7.10A Explain the significance of diversity in ecosystems.									—
4.7.10B Explain how structure, function and behavior of plants and animals affect their ability to survive.									—
4.7.10C Identify and explain why adaptations can lead to specialization.									—
4.8 Humans and the Environment									
4.8.4A Identify the biological requirements of humans.	I	I	I	I	P				
4.8.4B Know that environmental conditions influence where and how people live.		I	I	I	P				
4.8.4C Explain how human activities may change the environment.		I	I	I	P				
4.8.4D Know the importance of natural resources in daily life.		I	P	P	P				

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4.8.7A Describe how the development of civilization relates to the environment.						I		P	
4.8.7B Explain how people use natural resources.						IP	IP	IP	
4.8.7C Explain how human activities may affect local, regional and national environments.						IP	IP	IP	
4.8.7D. Explain the importance of maintaining the natural resources at the local, state and national levels.						IP	IP	IP	
4.8.10A Analyze how society's needs relate to the sustainability of natural resources.									I
4.8.10B Analyze the relationship between the use of natural resources and sustaining our society.									I
4.8.10C Analyze how human activities may cause changes in ecosystems.									I
4.8.10D Explain how the concept of supply and demand affects the environment.									I

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4.9 Environmental Laws and Regulations									
4.9.4A Know that there are laws and regulations for the environment.	I	I	I	I	P				
4.9.7A Explain the role of environmental laws and regulations.						I	I	P	
4.9.10A Explain why environmental laws and regulations are developed and enacted.									I