



GREAT NECK PUBLIC SCHOOLS

"Where Discovery Leads to Greatness"

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Curriculum Profile

<u>Department</u>	Science		
<u>Course Name</u>	7th Grade Life Science		
<u>Course Length</u>	1 Year		
<u>High School Credits</u>	N/A		
<u>Description</u>	The seventh-grade curriculum introduces students to topics in biology and chemistry. Course work covers such topics as biochemistry, life functions, cell structure, reproduction, genetics, and evolution. This course provides a strong foundation for the Biology curriculum students will cover in high school. Lab activities, engineering challenges, and a field trip to the Cold Spring Harbor DNA Lab serve to reinforce science skills, content, and practices		
<u>Target/eligible students</u>	7th grade students		
<u>State Learning Standards Link(s)</u>	Middle School Science-Learning-Standards		
<u>Primary texts and materials</u>	Explore Learning Sequence and material are at the discretion of the individual teacher and school		
<u>Scope/Sequence</u>	*Standards/Theme	Key Ideas, Term and Concepts	
<u>Introduction to Biochemistry</u>	MS-PS1-2 MS-PS1-5 MS-PS1-6 (only at SMS)	This unit serves as the chemical foundation needed to study biology. There is an emphasis on atomic and molecular models and conservation of mass in chemical reactions. serves as the foundation for the engineering challenge. To synthesize these concepts and concepts on energy, a thermal energy design project, with a focus on biological phenomena, serves as the culminating activity (at SMS only).	30 32
<u>From Molecules to Organisms: Structures and Processes</u>	MS-LS1-1 MS-LS1-2 MS-LS1-3 MS-LS1-8	Students will gain an understanding of cell theory, which states that all living things are composed of cells. Living things may be unicellular or multicellular. Students will develop a basic understanding of the structure and function of cellular organelles within a plant and animal cell, the role of cells in body systems, and how those systems work together to support the life functions of various organisms. Students will utilize microscopes to observe cells and will analyze how different environmental and genetic factors affect the function of cells and the various organ systems in species.	38
<u>Matter & Energy in Organisms & an Ecosystem</u>	MS-LS1-6 MS-LS1-7 MS-LS2-3	Students will analyze and interpret data, develop models, and construct arguments forming a deep understanding of the cycling of matter and flow of energy within an organism and in an ecosystem. All	39

		organisms cycle matter and convert energy from one form to another. Both matter and energy are necessary to build and maintain structures within an organism. They will see how both biotic and abiotic factors in an ecosystem affect populations.	
<u>Growth, Development, & Reproduction of Organisms</u>	MS-LS1-4 MS-LS1-5 MS-LS3-1 MS-LS3-2 MS-LS4-5	Students will gain a basic understanding of growth, development, and reproduction of living things. They will study both sexual and asexual reproduction. This unit of study will focus on such terms as meiosis, mitosis, genes, chromosomes, alleles, and mutations. Students will analyze and construct such models as pedigree charts and Punnett squares to analyze and determine the probability of the inheritance of various genes. They will also study artificial selection. Artificial selection is the identification by humans of desirable traits in plants and animals, and the steps taken to enhance and perpetuate those traits in future generations.	42
<u>Biological Evolution: Unity and Diversity</u>	MS-LS4-1 MS-LS4-2 MS-LS4-3 MS-LS4-4 MS-LS4-6 MS-ESS1-4:	Students will be able to construct explanations about Earth's biodiversity based on evidence of natural selection and evolution. They will use their understanding of genetic variations in a population to make sense of organisms surviving and reproducing, hence passing on the traits of the species. Students will analyze the embryological development of different species, study anatomical similarities of various organisms, and will use the fossil records to describe biological evolution.	42 44 47
<u>Engineering</u>	MS-ETS1-1 MS-ETS1-2 MS-ETS1-3 MS-ETS1-4	Throughout the course students utilize the engineering design process to solve problems. This includes defining problems and constraints, evaluating competing designs, analyzing data from tests, and developing models to achieve optimal designs.	52
<u>Additional Notes</u>	Sequence and material are at the discretion of the individual teacher and school		