المدرسة الأمريكية الدولية
American International School

MIDDLE SCHOOL

International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

SCIENCE SCOPE AND SEQUENCE
AY 26-27

STRAND	NGSS STANDARDS	GRADE 6	GRADE 7	GRADE 8
Physical Sciences	**MS. Structure and Properties of Matter**	MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures.	
	MS. Chemical Reactions	MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	
	MS. Forces and Interactions		MS-PS2-5. Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	
	MS. Energy	MS-PS3-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.		
	MS. Waves and Electromagnetic Radiation			MS-PS4-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.
				MS-PS4-2. Develop and use a model to describe that waves are

				reflected, absorbed, or transmitted through various materials.
Life Sciences	**MS. Structure, Function, and Information Processing**		MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	
			MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.	
			MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells	
	MS. Growth, Development, and Reproduction of Organisms		.	MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
				MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms
				MS-LS3-2. Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information, and sexual reproduction results in offspring with genetic variation.

	MS. Matter and Energy in Organisms and Ecosystems	MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem. MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.		
	MS. Interdependent Relationships in Ecosystems	MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.		
Earth and Space Sciences	**MS. Space Systems**		MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	
	MS. Earth's Systems	MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.		
	MS. Weather and Climate			MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of

				atmospheric and oceanic circulation that determine regional climates.
				MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
Engineering Design	**MS. Engineering Design**			MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
				MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
				MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
				MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.