Science

Science classes at Hsinchu International School will teach students to think and act like scientists and will prepare students for life in an increasingly scientific and technological world. Through our holistic curriculum, students will study various phenomena each year, thereby gaining a deep understanding of the concepts and the methodology employed in each of the core fields of science (physics, chemistry and biology). Through hands-on experiences and investigations, our highly interactive science curriculum will explore, through the lens of science and math, the local and global concepts that affect the students and their communities. In accordance with the broader goals of the secondary school institutes, the seventh and eighth grade students (Institute I) will hone their skills of observation, modeling, and identification; the ninth and tenth graders (Institute II) will learn to make predictions about how the components of various systems interact with each other; and the eleventh and twelfth graders (Institute III) will apply their scientific reasoning skills to real-world problems, initiating investigations and designing solutions. The upper-level science courses will prepare students for the AP exams.

	Chemistry	Biology	Earth/Environmental	Physics
Institute I Science 7 Standards **Science 7 Benchmarks**	*The students will understand the significance of characteristic properties and be able to use these properties to describe matter.* Characteristic properties: -- include density, boiling points freezing point, and melting point. -- are independent of the amount of substance -- can be found experimentally	*How do the human body systems (Digestive, Respiratory, Circulatory, Muscular, Nervous) work together?* Functions and parts of: digestive, respiratory, circulatory, muscular, and nervous systems.	*How does the inside of the Earth control the outside of the Earth?* Continental Drift & Plate Tectonics, Earthquakes, volcanoes, tsunamis	*Is there another planet like earth in the Universe?* Parts and functions of our Solar System, Galaxies, Universe (including asteroids, meteors, and comets)
Institute I Science 8 Standards **Science 8 Benchmarks**	*Can matter disappear?* Physical vs. Chemical Changes, Physical Changes and Conservation of Mass, Chemical Changes and Conservation of Mass, Balancing Chemical Equations	*The student will understand that organisms and their environments are interconnected and changes in one part of the system will affect other parts of the system.* -- A biome is an ecosystem that covers a large part of the Earth and organisms adapt to survive -- A population is a local group of one species and populations interact in many ways. -- Energy flows from producer to consumer and disturbances can affect every species within the ecosystem.	*How do global issues set the stage for weather catastrophes?* Global warming, pollution, loss of biodiversity, flooding, lightning, typhoons, hurricanes and tornadoes	*How did that 'apple' fall down?* Motion in 1-D and 2-D, Newton's Laws and Energy
Institute II ***Science 9*** ***Science 9 Content***	Chemistry: *What makes up matter?* Nuclear Chemistry, Periodic Trends, Bonding, Solutions, Compounds, Mixtures, Gas Laws *What are the rules of Chemistry?* Stoichiometry, Chemical Reactions (exothermic and endothermic), acid and bases		Physics: *How and Why Things Move?* *How is energy transformed, conserved and used by everything in the cosmos?* Mechanics, Kinematics, Energy in it's different forms, impulse, momentum, Relativity, Quantum Mechanics and String Theory	
Institute II ***Science 10*** ***Science 10***	Biology: (Micro) *What are living things made of?* *What are the principles of genetics and how is genetics related to evolution?* -Carbs, lipids, proteins, nuc. acids, enzymes, respiration/ photosynthesis, cell structure and function, cell signaling development -Cellular reproduction, molecular Genetics and Heredity, DNA/RNA		Biology: (Macro) *How is "form follows function" shown in the structure of animals and plants?* *Did we come from amoebas?* Animal Structure and Physiology (including classification)	

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Institute III ***Global Environmental Issues*** (Grade 11)	In this science course students will understand the interconnectedness of issues that effect countries around the globe. Criteria will be developed for determining what makes an issue a "global issue." We will define what sustainability means in terms of the economy, the environment and society. Students will then analyze the sustainability of a variety of actions taken by individuals, businesses, and governments that affect these three areas. We will identify the components of an Ecological Footprint and students will explore what they want their future to look like.	
Institute III ***AP Biology*** ***AP Chemistry***	During these courses, students will delve into the topics of Biology, Chemistry and Physics. The in depth study of these subjects will help students acquire a deep and meaningful appreciation for each area explored as well as preparing students for the AP exam.	AP Exam will be taken in May of each year and will be required for all students taking an AP course.