Next Generation Science Standards:
Life Science
7th Grade

SCI 100 Integrated (Life) Science I

No graduation credit
5 days per week; 1 year
Taught in English

This is a ***required course for all 7th grade students*** in the Mexican and/or U.S. diploma program. Major content area in the life science domain includes the structure and function of cells, cell processes and reproduction, heredity and human body systems. The chemistry domain includes structure of the atom, the relationship between chemistry and life science and organic and inorganic compounds. The scientific inquiry domain includes measurements, the international system of units, and the selection of appropriate tools and technology for scientific activities. Students will learn to use the scientific method to solve problems.

Textbook:
Biggs A., Daniel L., Ortleb E, Rillero P., Zike D. Life Science. Glencoe/McGraw/Hill (2008 Edition)

Prerequisite: NONE

Strand 1 = Structure, Function, and Information Processing
Strand 2 = Matter and Energy in Organisms and Ecosystems
Strand 3 = Interdependent Relationships in Ecosystems
Strand 4 = Natural Selection and Adaptations
Strand 5 = Growth, Development, and Reproduction of Organisms
Strand 6 = Engineering Design

Strand 1: Structure, Function, and Information Processing

Standard 1: Structure and Function

Benchmark Code	Benchmark
MS-LS1-1	The student will 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	The student will develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.
MS-LS1-3	The student will use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

Standard 2: Information Processing

Benchmark Code	Benchmark
MS-LS1-8	The student will gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

Strand 2: Matter and Energy in Organisms and Ecosystems	
Standard 1: Organization for Matter and Energy Flow in Organisms	
Benchmark Code	Benchmark
MS-LS1-6	The student will construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
MS-LS1-7	The student will develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and /or release energy as this matter moves through an organism.
Standard 2: Interdependent Relationships in Ecosystems (repeated in Strand 3)	
Benchmark Code	Benchmark
MS-LS2-1	The student will analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
Standard 3: Cycle and Matter and Energy Transfer in Ecosystems	
Benchmark Code	Benchmark
MS-LS2-3	The student will develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
Standard 3: Ecosystem Dynamics, Functioning, and Resilience (repeated in Strand 3)	
Benchmark Code	Benchmark
MS-LS2-4	The student will construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
Strand 3: Interdependent Relationships in Ecosystems	
Standard 1: Interdependent Relationships in Ecosystems (repeated in Strand 3)	
Benchmark Code	Benchmark
MS-LS2-2	The student will construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
Standard 2: Ecosystem Dynamics, Functioning, and Resilience (repeated in Strand 3)	
Benchmark Code	Benchmark
MS-LS2-5 Repeat	The student will evaluate competing design solutions for maintaining biodiversity and ecosystem services.

Strand 4: Natural Selection and Adaptations	
Standard 1: Evidence of Common Ancestry and Diversity	
Benchmark Code	Benchmark
MS-LS4-1	The student will analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of live on Earth under the assumption that natural laws operate today as in the past.
MS-LS4-2	The student will apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.
MS-LS4-3	The student will analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.
Standard 2: Natural Selection	
Benchmark Code	Benchmark
MS-LS4-4	The student will construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
Standard 3: Adaptation	
Benchmark Code	Benchmark
MS-LS4-6	The student will use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.
Strand 5: Growth, Development, and Reproduction of Organisms	
Standard 1: Growth, Development, and Reproduction of Organisms	
Benchmark Code	Benchmark
MS-LS1-4	The student will 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	The student will construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

Standard 2: Inheritance and Variation of Traits	
Benchmark Code	Benchmark
MS-LS3-1 Repeat	The student will develop and use a model to describe why structural changes to genes (mutations located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.
MS-LS3-2 Repeat	The student will 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
Standard 3: Natural Selection	
Benchmark Code	Benchmark
MS-LS4-5	The student will gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.
Strand 6: Engineering Design	
Benchmark Code	Benchmark
MS-ETS1-1 Repeat	The student will 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	The student will evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
MS-ETS1-3	The student will analyze 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	The student will 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.