

Science TAKS Objectives for Grades 10 and 11

Objective 1

The student will demonstrate an understanding of the nature of science.

Bio (1) and IPC (1) The student, for at least 40% of instructional time, conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	1A	demonstrate safe practices during field and laboratory investigations

Bio (2) and IPC (2) The student uses scientific methods during field and laboratory investigations. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	2A	plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology
✓	✓	2B	collect data and make measurements with precision
✓	✓	2C	organize, analyze, evaluate, make inferences, and predict trends from data
✓	✓	2D	communicate valid conclusions

IPC (3) The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	3A	analyze, review, [and critique] scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information
✓	✓	3B	draw inferences based on data related to [promotional materials for] products and services

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Objective 2

The student will demonstrate an understanding of the organization of living systems.

Biology (4) The student knows that cells are the basic structures of all living things and have specialized parts that perform specific functions, and that viruses are different from cells and have different properties and functions. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	4B	investigate and identify cellular processes including homeostasis, permeability, energy production, transportation of molecules, disposal of wastes, function of cellular parts, and synthesis of new molecules

Biology (6) The student know the structures and functions of nucleic acids in the mechanisms of genetics. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	6A	describe components of deoxyribonucleic acid (DNA), and illustrate how information for specifying the traits of an organism is carried in the DNA
	✓	6B	explain replication, transcription, and translation using models of DNA and ribonucleic acid (RNA)
✓	✓	6C	identify and illustrate how changes in DNA cause mutations and evaluate the significance of these changes
✓		6D	compare genetic variations observed in plants and animals

Biology (8) The student knows applications of taxonomy and can identify its limitations. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	8C	identify characteristics of kingdoms including monerans, protists, fungi, plants and animals (TAKS will use the most current classification system)

Biology (10) The student knows that, at all levels of nature, living systems are found within other living systems, each with its own boundary and limits. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	10A	interpret the functions of system in organisms including circulatory, digestive, nervous, endocrine, reproductive, integumentary, skeletal, respiratory, muscular, excretory, and immune
	✓	10B	compare the interrelationships of organ systems to each other and to the body as a whole

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Objective 3

The student will demonstrate an understanding of the interdependence of organisms and the environment.

Biology (4) The student knows that cells are the basic structures of all living things and have specialized parts that perform specific functions, and that viruses are different from cells and have different properties and functions. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	4C	compare the structure and functions of viruses to cells and describe the role of viruses in causing diseases and conditions such as acquired immune deficiency syndrome, common colds, smallpox, influenza, and warts
✓	✓	4D	identify and describe the role of bacteria in maintaining health such as in digestion and in causing diseases such as in streptococcus infections and diphtheria

Biology (7) The student knows the theory of biological evolution. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
	✓	7A	identify evidence in change in species using fossils, DNA sequences, anatomical similarities, physiological similarities, and embryology
✓	✓	7B	illustrate the results of natural selection in speciation, diversity, phylogeny, adaptation, behavior, and extinction

Biology (9) The student knows metabolic processes and energy transfers that occur in living organisms. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
	✓	9D	analyze the flow of matter and energy through different trophic levels and between organisms and the physical environment

Biology (12) The student knows that interdependence and interactions occur within an ecosystem. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	12B	interpret interactions among organisms exhibiting predation, parasitism, commensalisms, and mutualism
✓	✓	12E	investigate and explain the interactions in an ecosystem including food chains, food webs, and food pyramids

Biology (13) The student knows the significance of plants in the environment. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	13A	evaluate the significance of structural and physiological adaptations of plants to their environment

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Objective 4

The student will demonstrate an understanding of the structures and properties of matter.

IPC (7) The student knows relationships exist between properties of matter and its components. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	7A	investigate and identify properties of fluids including density, viscosity, and buoyancy
	✓	7D	relate the chemical behavior of an element including bonding, to its placement on the periodic table
✓		7E	classify samples of matter from everyday life as being elements, compounds, or mixtures

IPC (8) The student knows that changes in matter affect everyday life. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	8A	distinguish between physical and chemical changes in matter such as oxidation, digestion, changes in states, and stages in the rock cycle
✓	✓	8C	investigate and identify the law of conservation of mass

IPC (9) The student knows how solution chemistry is a part of everyday life. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	9A	relate the structure of water to its function [as the universal solvent]
	✓	9B	relate the concentration of ions in a solution to physical and chemical properties such as pH, electrolytic behavior, and reactivity
✓	✓	9D	demonstrate how various factors influence solubility including temperature, pressure, and nature of the solute and solvent

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Objective 5

The student will demonstrate an understanding of motion, forces, and energy.

IPC (4) The student knows the concepts of force and motion evidence in everyday life. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	4A	calculate speed, momentum, acceleration, work, and power in systems such as in the human body, moving toys, and machines
✓	✓	4B	investigate and describe applications of Newton's laws such as in vehicle restraints, sports activities, geological processes, and satellite orbits
	✓	4D	investigate and demonstrate [mechanical advantage and] efficiency of various machines such as levers, motors, wheels and axles, pulleys, and ramps

IPC (5) The student knows the effects of waves on everyday life. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓		5A	demonstrate wave types and their characteristics through a variety of activities such as modeling with ropes and coils, activating tuning forks, and interpreting data on seismic waves
	✓	5B	demonstrate wave interactions including interference, polarization, reflection, refraction, and resonance within various materials

IPC (6) The student knows the impact of energy transformations in everyday life. The student is expected to:

Grade 10	Grade 11	TEKS Student Expectations	
✓	✓	6A	describe the law of conservation of energy
✓	✓	6B	investigate and demonstrate the movement of heat through solids, liquids, and gases by convection, conduction, and radiation
	✓	6D	investigate and compare economic and environmental impacts of using various energy sources such as rechargeable or disposable batteries and solar cells
✓		6F	investigate and compare series and parallel circuits