

**Side-by-Side Comparison of the Texas Educational Knowledge and Skills (TEKS)  
and Louisiana Grade Level Expectations (GLEs)**

**SCIENCE: Biology**

TEKS	Comments	Louisiana GLE
(Bio.1) Scientific Processes. The student, for at least 40% of instructional time, conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.		The Abilities Necessary to Do Scientific Inquiry (SI)
(Bio.1.A) demonstrate safe practices during field and laboratory investigations; and	<i>TAKS Objective Implied</i>	SI GLE 10. Given a description of an experiment, identify appropriate safety measures (SI-H-A7)
(Bio.1.B) make wise choices in the use and conservation of resources and the disposal or recycling of materials.	<i>Not specifically addressed in LA</i>	
(Bio.2) Scientific Processes. The student uses scientific methods during field and laboratory investigations.		The Abilities Necessary to Do Scientific Inquiry(SI)
(Bio.2.A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology;	<i>TAKS Objective Similar</i>	SI GLE 1. Write a testable question or hypothesis when given a topic (SI-H-A1)  SI GLE Plan and record step-by-step procedures for a valid investigation, select equipment and materials, and identify variables and controls (SI-H-A2)  SI GLE 4. Conduct an investigation that includes multiple trials and record, organize, and display data appropriately (SI-H-A2)  SI GLE 6. Use technology when appropriate to enhance laboratory investigations and presentations of findings (SI-H-A3)
(Bio.2.B) collect data and make measurements with precision;	<i>TAKS Objective Implied</i>	SI GLE 4. Conduct an investigation that includes multiple trials and record, organize, and display data appropriately (SI-H-A2)
(Bio.2.C) organize, analyze, evaluate, make inferences, and predict trends from data; and	<i>TAKS Objective Similar</i>	SI GLE 9. Write and defend a conclusion based on logical analysis of experimental data (SI-H-A6) (SI-H-A2)  SI GLE 5. Utilize mathematics, organizational tools, and graphing skills to solve problems (SI-H-A3)  SI GLE 15. Analyze the conclusion from an investigation by using data to determine its validity (SI-H-B4)
(Bio.2.D) communicate valid conclusions.	<i>TAKS Objective Similar</i>	9. Write and defend a conclusion based on logical analysis of experimental data (SI-H-A6) (SI-H-A2)

TEKS	Comments	Louisiana GLE
(Bio.3) Scientific Processes. The student uses critical thinking and scientific problem solving to make informed decisions.		Understanding Scientific Inquiry(SI)
(Bio.3.A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;	<i>Implied</i>	SI GLE 11. Evaluate selected theories based on supporting scientific evidence (SI-H-B1)  SI GLE 15. Analyze the conclusion from an investigation by using data to determine its validity (SI-H-B4)  SI GLE 16. Use the following rules of evidence to examine experimental results: (a) Can an expert's technique or theory be tested, has it been tested, or is it simply a subjective, conclusive approach that cannot be reasonably assessed for reliability? (b) Has the technique or theory been subjected to peer review and publication? (c) What is the known or potential rate of error of the technique or theory when applied? (d) Were standards and controls applied and maintained? (e) Has the technique or theory been generally accepted in the scientific community? (SI-H-B5) (SI-H-B1) (SI-H-B4)
(Bio.3.B) evaluate promotional claims that relate to biological issues such as product labeling and advertisements;	<i>Not specifically addressed in LA</i>	
(Bio.3.C) evaluate the impact of research on scientific thought, society, and the environment;	<i>Similar</i>	SI GLE 14. Cite examples of scientific advances and emerging technologies and how they affect society (e.g., MRI, DNA in forensics) (SI-H-B3)
(Bio.3.D) describe the connection between biology and future careers;	<i>Not specifically addressed in LA</i>	
	<i>Not specifically addressed in TX</i>	SI GLE 14. Cite examples of scientific advances and emerging technologies and how they affect society (e.g., MRI, DNA in forensics) (SI-H-B3)
(Bio.3.E) evaluate models according to their adequacy in representing biological objects or events; and	<i>Similar</i>	SI GLE 7. Choose appropriate models to explain scientific knowledge or experimental results (e.g., objects, mathematical relationships, plans, schemes, examples, role-playing, computer simulations) (SI-H-A4)
(Bio.3.F) research and describe the history of biology and contributions of scientists.	<i>Implied</i>	SI GLE 11. Evaluate selected theories based on supporting scientific evidence (SI-H-B1) SI GLE 13. Identify scientific evidence that has caused modifications in previously accepted theories (SI-H-B2)
	<i>Not specifically addressed in TX</i>	BIO GLE 12. Describe the processes used in modern biotechnology related to genetic engineering (LS-H-B4) (LS-H-B1)
	<i>Not specifically addressed in TX</i>	BIO GLE 13. Identify possible positive and negative effects of advances in biotechnology (LS-H-B4) (LS-H-B1)

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(Bio.4) Science Concepts. 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.		Life Science The Cell (Bio) Personal & Community Health (Bio) Biological Evolution (Bio)
(Bio.4.A) identify the parts of prokaryotic and eukaryotic cells;	<i>Similar</i>	BIO GLE 1. Compare prokaryotic and eukaryotic cells (LS-H-A1)
(Bio.4.B) 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;	<i>TAKS Objective Similar</i>	BIO GLE 2. Identify and describe structural and functional differences among organelles (LS-H-A1)  BIO GLE 3. Investigate and describe the role of enzymes in the function of a cell (LS-H-A1)  BIO GLE 4. Compare active and passive cellular transport (LS-H-A2)  BIO GLE 5. Analyze the movement of water across a cell membrane in hypotonic, isotonic, and hypertonic solutions (LS-H-A2)  BIO GLE 30. Explain the role of adenosine triphosphate (ATP) in a cell (LS-H-E2)
(Bio.4.C) compare the structures 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; and	<i>TAKS Objective Implied</i>	BIO GLE 38. Discuss mechanisms of disease transmission and processes of infection (LS-H-G2) (LS-H-G4)  BIO GLE 21. Compare the structures, functions, and cycles of viruses to those of cells (LS-H-C7)  BIO GLE 22. Describe the role of viruses in causing diseases and conditions (e.g., AIDS, common colds, smallpox, influenza, warts) (LS-H-C7) (LS-H-G2)
(Bio.4.D) 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.	<i>TAKS Objective Implied</i>	BIO GLE 38. Discuss mechanisms of disease transmission and processes of infection (LS-H-G2) (LS-H-G4) 41. Describe causes, symptoms, treatments, and preventions of major communicable and non-communicable diseases (LS-H-G4)
	<i>Not specifically addressed in TX</i>	BIO GLE 40. Determine the relationship between vaccination and immunity (LS-H-G3)
	<i>Not specifically addressed in TX</i>	BIO GLE 42. Summarize the uses of selected technological developments related to the prevention, diagnosis, and treatment of diseases or disorders (LS-H-G5)
(Bio.5) Science Concepts. The student knows how an organism grows and how specialized cells, tissues, and organs develop.		The Cell (Bio) Systems and the Behavior of Organisms (Bio)

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(Bio.5.A) compare cells from different parts of plants and animals including roots, stems, leaves, epithelia, muscles, and bones to show specialization of structure and function;	<i>Not specifically addressed in LA</i>	
(Bio.5.B) identify cell differentiation in the development of organisms; and	<i>Implied</i>	BIO GLE 6. Analyze a diagram of a developing zygote to determine when cell differentiation occurs (LS-H-A3)
(Bio.5.C) sequence the levels of organization in multicellular organisms to relate the parts to each other and to the whole.	<i>Implied</i>	3 BIO GLE 1. Compare the levels of organization in the biosphere (LS-H-E3) [This includes organelles, cells, tissues, organs, organ systems & organisms.]  BIO GLE 32. Analyze the interrelationships of organs in major systems (LS-H-F1) (LS-H-E3)  BIO GLE 33. Compare structure to function of organs in a variety of organisms (LS-H-F1)  BIO GLE 34. Explain how body systems maintain homeostasis (LS-H-F2)
(Bio.6) Science Concepts. The student knows the structures and functions of nucleic acids in the mechanisms of genetics.		The Molecular Basis of Heredity (LS)
(Bio.6.A) describe components of deoxyribonucleic acid (DNA), and illustrate how information for specifying the traits of an organism is carried in the DNA;	<i>TAKS Objective Similar</i>	BIO GLE 7. Identify the basic structure and function of nucleic acids (e.g., DNA, RNA) (LS-H-B1)  BIO GLE 8. Describe the relationships among DNA, genes, chromosomes, and proteins (LS-H-B1)
(Bio.6.B) explain replication, transcription, and translation using models of DNA and ribonucleic acid (RNA);	<i>TAKS Objective Similar</i>	BIO GLE 7. Identify the basic structure and function of nucleic acids (e.g., DNA, RNA) (LS-H-B1)  BIO GLE 8. Describe the relationships among DNA, genes, chromosomes, and proteins (LS-H-B1)
(Bio.6.C) identify and illustrate how changes in DNA cause mutations and evaluate the significance of these changes;	<i>TAKS Objective Not specifically addressed in LA</i>	
(Bio.6.D) compare genetic variations observed in plants and animals;	<i>TAKS Objective Similar</i>	BIO GLE 10. Analyze pedigrees to identify patterns of inheritance for common genetic disorders (LS-H-B3)  BIO GLE 11. Calculate the probability of genotypes and phenotypes of offspring given the parental genotypes (LS-H-B3)
(Bio.6.E) compare the processes of mitosis and meiosis and their significance to sexual and asexual reproduction; and	<i>Implied</i>	BIO GLE 9. Compare mitosis and meiosis (LS-H-B2)
(Bio.6.F) identify and analyze karyotypes.	<i>Not specifically addressed in LA</i>	

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(Bio.7) Science Concepts. The student knows the theory of biological evolution.		Biological Evolution (LS)
(Bio.7.A) identify evidence of change in species using fossils, DNA sequences, anatomical similarities, physiological similarities, and embryology; and	<i>TAKS Objective Similar</i>	BIO GLE 14. Analyze evidence on biological evolution, utilizing descriptions of existing investigations, computer models, and fossil records (LS-H-C1)  BIO GLE 15. Compare the embryological development of animals in different phyla (LS-H-C1) (LS-H-A3)
(Bio.7.B) illustrate the results of natural selection in speciation, diversity, phylogeny, adaptation, behavior, and extinction.	<i>TAKS Objective Implied</i>	BIO GLE 17. Explain how factors affect gene frequency in a population over time (LS-H-C3)  BIO GLE 36. Explain how behavior affects the survival of species (LS-H-F4)
	<i>Not specifically addressed in TX</i>	BIO GLE 16. Explain how DNA evidence and fossil records support Darwin's theory of evolution (LS-H-C2)
(Bio.8) Science Concepts. The student knows applications of taxonomy and can identify its limitations.		Biological Evolution (LS)
(Bio.8.A) collect and classify organisms at several taxonomic levels such as species, phylum, and kingdom using dichotomous keys;		BIO GLE 18. Classify organisms from different kingdoms at several taxonomic levels, using a dichotomous key (LS-H-C4)
(Bio.8.B) analyze relationships among organisms and develop a model of a hierarchical classification system based on similarities and differences using taxonomic nomenclature; and	<i>Not specifically addressed in LA</i>	
(Bio.8.C) identify characteristics of kingdoms including monerans, protists, fungi, plants, and animals.	<i>TAKS Objective Implied</i>	BIO GLE 19. Compare characteristics of the major kingdoms (LS-H-C5)
(Bio.9) Science Concepts. The student knows metabolic processes and energy transfers that occur in living organisms.		Matter, Energy, and Organization of Living Systems (LS) Interdependence of Organisms (LS)
(Bio.9.A) compare the structures and functions of different types of biomolecules such as carbohydrates, lipids, proteins, and nucleic acids;	<i>Implied</i>  <i>The structure of organic compounds is addressed in Chemistry in LA with GLE 26</i>	BIO GLE 7. Identify the basic structure and function of nucleic acids (e.g., DNA, RNA) (LS-H-B1)  BIO GLE 8. Describe the relationships among DNA, genes, chromosomes, and proteins (LS-H-B1)  BIO GLE 30. Explain the role of adenosine triphosphate (ATP) in a cell (LS-H-E2)

TEKS	Comments	Louisiana GLE
(Bio.9.B) compare the energy flow in photosynthesis to the energy flow in cellular respiration;	<i>Similar</i>	BIO GLE 28. Explain why ecosystems require a continuous input of energy from the Sun (LS-H-E1)  BIO GLE 29. Use balanced equations to analyze the relationship between photosynthesis and cellular respiration (LS-H-E1)
(Bio.9.C) investigate and identify the effects of enzymes on food molecules; and	<i>Similar.</i>	Bio GLE 3. Investigate and describe the role of enzymes in the function of a cell (LS-H-A1)
(Bio.9.D) analyze the flow of matter and energy through different trophic levels and between organisms and the physical environment.	<i>TAKS Objective</i>  <i>Similar</i>	BIO GLE 24. Analyze food webs by predicting the impact of the loss or gain of an organism (LS-H-D2)  BIO GLE 25. Evaluate the efficiency of the flow of energy and matter through a food chain/pyramid (LS-H-D2)  BIO GLE 26. Analyze the dynamics of a population with and without limiting factors (LS-H-D3)  BIO GLE 27. Analyze positive and negative effects of human actions on ecosystems (LS-H-D4) (SE-H-A7)
(Bio.10) Science Concepts. The student knows that, at all levels of nature, living systems are found within other living systems, each with its own boundary and limits.		Matter, Energy, and Organization of Living Systems (LS)
(Bio.10.A) interpret the functions of systems in organisms including circulatory, digestive, nervous, endocrine, reproductive, integumentary, skeletal, respiratory, muscular, excretory, and immune;	<i>TAKS Objective</i> <i>Similar</i>	BIO GLE 33. Compare structure to function of organs in a variety of organisms (LS-H-F1)  BIO GLE 34. Explain how body systems maintain homeostasis (LS-H-F2)  BIO GLE 39. Compare the functions of the basic components of the human immune system (LS-H-G3)
(Bio.10.B) compare the interrelationships of organ systems to each other and to the body as a whole; and	<i>TAKS Objective</i> <i>Similar</i>	BIO GLE 32. Analyze the interrelationships of organs in major systems (LS-H-F1) (LS-H-E3)  BIO GLE 33. Compare structure to function of organs in a variety of organisms (LS-H-F1)  BIO GLE 39. Compare the functions of the basic components of the human immune system (LS-H-G3)
(Bio.10.C) analyze and identify characteristics of plant systems and subsystems.	<i>These GLEs were written this way so that systems in all multicellular organisms would be explored.</i>	BIO GLE 32. Analyze the interrelationships of organs in major systems (LS-H-F1) (LS-H-E3)  BIO GLE 33. Compare structure to function of organs in a variety of organisms (LS-H-F1)

TEKS	Comments	Louisiana GLE
(Bio.11) Science Concepts. The student knows that organisms maintain homeostasis.		Systems and the Behavior of Organisms (LS) Personal and Community Health (LS)
(Bio.11.A) identify and describe the relationships between internal feedback mechanisms in the maintenance of homeostasis;	<i>Similar</i>	BIO GLE 34. Explain how body systems maintain homeostasis (LS-H-F2)\  BIO GLE 35. Explain how selected organisms respond to a variety of stimuli (LS-H-F3)
(Bio.11.B) investigate and identify how organisms, including humans, respond to external stimuli;	<i>Implied</i>	BIO GLE 35. Explain how selected organisms respond to a variety of stimuli (LS-H-F3)
(Bio.11.C) analyze the importance of nutrition, environmental conditions, and physical exercise on health; and	<i>Similar</i>	BIO GLE 37. Explain how fitness and health maintenance can result in a longer human life span (LS-H-G1)
(Bio.11.D) summarize the role of microorganisms in maintaining and disrupting equilibrium including diseases in plants and animals and decay in an ecosystem.	<i>Implied</i>	BIO GLE 22. Describe the role of viruses in causing diseases and conditions (e.g., AIDS, common colds, smallpox, influenza, warts) (LS-H-C7) (LS-H-G2)  BIO GLE 24. Analyze food webs by predicting the impact of the loss or gain of an organism (LS-H-D2)  BIO GLE 26. Analyze the dynamics of a population with and without limiting factors (LS-H-D3)
(Bio.12) Science Concepts. The student knows that interdependence and interactions occur within an ecosystem.		Interdependence of Organisms (SE)
(Bio.12.A) analyze the flow of energy through various cycles including the carbon, oxygen, nitrogen, and water cycles;	<i>Similar</i>	BIO GLE 23. Illustrate the flow of carbon, nitrogen, and water through an ecosystem (LS-H-D1) (SE-H-A6)
(Bio.12.B) interpret interactions among organisms exhibiting predation, parasitism, commensalism, and mutualism;	<i>TAKS Objective Implied</i>	BIO GLE. Analyze food webs by predicting the impact of the loss or gain of an organism (LS-H-D2)  BIO GLE 36. Explain how behavior affects the survival of species (LS-H-F4)
(Bio.12.C) compare variations, tolerances, and adaptations of plants and animals in different biomes;	<i>Not specifically addressed in LA</i>	
(Bio.12.D) identify and illustrate that long-term survival of species is dependent on a resource base that may be limited; and	<i>Implied</i>	BIO GLE 26. Analyze the dynamics of a population with and without limiting factors (LS-H-D3)  BIO GLE 27. Analyze positive and negative effects of human actions on ecosystems (LS-H-D4) (SE-H-A7)
(Bio.12.E) investigate and explain the interactions in an ecosystem including food chains, food webs, and food pyramids.	<i>TAKS Objective Implied</i>	BIO GLE 25. Evaluate the efficiency of the flow of energy and matter through a food chain/pyramid (LS-H-D2)

TEKS	Comments	Louisiana GLE
	<i>Not specifically addressed in TX</i>	BIO GLE 27. Analyze positive and negative effects of human actions on ecosystems (LS-H-D4) (SE-H-A7)
	<i>Not specifically addressed in TX</i>	BIO GLE 28. Explain why ecosystems require a continuous input of energy from the Sun (LS-H-E1)
(Bio.13) Science Concepts. The student knows the significance of plants in the environment.		Matter, Energy, and Organization of Living Systems (LS) The Molecular Basis of Heredity (LS) Biological Evolution (LS) Interdependence of Organisms (LS) Personal and Community Health (LS)
(Bio.13.A) evaluate the significance of structural and physiological adaptations of plants to their environments; and	<i>TAKS Objective Implied</i>	BIO GLE 17. Explain how factors affect gene frequency in a population over time (LS-H-C3)  BIO GLE 36. Explain how behavior affects the survival of species (LS-H-F4)
(Bio.13.B) survey and identify methods of reproduction, growth, and development of various types of plants.	<i>Implied</i>	BIO GLE 20. Analyze differences in life cycles of selected organisms in each of the kingdoms (LS-H-C6)