Course Name: Biology
School Year: 2025-2026

Course Purpose and Relevance:

Biology covers fundamental concepts through patterns, processes, and relationships of living organisms. Students explore biological structures, functions, and processes, genetics, evolution, and environmental systems. The course integrates scientific and engineering practices, emphasizing critical thinking, problem-solving, and ethical decision-making. Students will engage in hands-on investigations and analysis to understand the nature of science, including scientific hypotheses, theories, and models. The curriculum also addresses the significance of matter cycling, energy flow, and enzyme functions, and the interactions within ecosystems. Students will learn to apply models, analyze data, and communicate findings to grasp how systems function and interact with their environment, providing a strong foundation for further scientific study and informed decision-making.

Biology Honors offers an in-depth exploration of the fundamental principles and advanced concepts of biological science. Designed for students with a strong interest in biology and a passion for scientific inquiry, this course emphasizes critical thinking, experimental design, and data analysis.

Overview of Student Outcomes:

In this Biology course, students, for at least 40% of instructional time, will gain a comprehensive understanding of fundamental concepts and practices in biological science through hands-on experiments and critical analysis. The course emphasizes key biology topics, including:

- **Biological Structures, Functions, and Processes:** Students will study the structure and function of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids. They will compare prokaryotic and eukaryotic cells, explore homeostasis through cellular transport, and understand how viruses differ from cells and cause disease.
- **Cell Growth and Differentiation:** Students will learn about the cell cycle, DNA replication, and cell differentiation. They will explore how disruptions in the cell cycle can lead to diseases like cancer.
- **Genetics and Gene Expression:** The course covers the role of nucleic acids in gene expression, including DNA components, protein synthesis, and molecular technologies such as PCR and gel electrophoresis. Students will analyze genetic inheritance through Mendelian and non-Mendelian genetics, including genetic variations and their implications.
- **Biological Evolution:** Students will examine evolutionary theory, including evidence of common ancestry from fossils, biogeography, and homologies. They will analyze mechanisms of evolution such as natural selection, genetic drift, and gene flow, and their roles in speciation and biodiversity.
- **Ecological Systems and Interdependence:** Students will investigate ecological relationships and their impact on ecosystem stability. They will analyze how matter cycles and energy flows through ecosystems, understand the significance of carbon and nitrogen cycles, and explore the effects of environmental changes and human activities on biodiversity.

Students will engage in a variety of investigations—descriptive, comparative, and experimental—using scientific and engineering practices. They will develop models, analyze data, and communicate their findings effectively.

Science is viewed through recurring themes of systems, models, and patterns. Students will learn to analyze biological systems in terms of their components and interactions, using models to make predictions and understand scientific concepts. This approach helps students grasp how living systems function and interact with their environment, providing a strong foundation for further scientific study and application.

Available Support for Student Learning:

Refer to the teacher's Course Syllabus for resources and course specific opportunities.
Student textbook and/or digital version are available through the CCISD Student Portal.

Link to Course TEKS on State website:

Biology TEKS Link

Year-at-a-Glance 25-26	Subject	Biology (On Level and Honors)

	First Semester Instruction
1st Nine Weeks	**Unit 1: Scientific and Engineering Practices** BB 1: Lab Safety in Biology (1C) BB 2: Exploring Phenomena through Inquiry and Engineering Design (1-4) ***TEKS 1-4 will be embedded throughout each unit supporting the implementation of 3-Dimensional Instruction.***
	Unit 2: Biological Structures, Functions, and Processes BB 1: Viruses (5D) BB 2: Prokaryotic vs Eukaryotic Cells (**5B**) BB 3: Cellular Respiration and Photosynthesis (11A, **11B**)
	Unit 3: Biomolecules and Cell Transport BB 1: Biomolecules: Impact on Cell Structure and Function (5A, **5B***) BB 2: Enzyme Investigation (**11B**) BB 3: Cell Transport in Relation to Cell Function (5C, 11A, **11B**)
2nd Nine Weeks	**Unit 4: Role of Cell Cycle in Organism Growth** BB 1: DNA Structure & Function (7A) BB 2: Cell Cycle (6A, **11B**) BB 3: Cell Differentiation (6B) BB 4: Disruptions of the Cell Cycle (**6C)**
	Unit 5: Role of Nucleic Acids in Gene Expression BB 1: Protein Synthesis (7B, 7A, **11B**) BB 2: Mutations (**7C**, *7D^*)
	Unit 6: Meiosis BB 1: Mechanisms of Genetic Diversity (8A) BB 2: Significance of Sexual Reproduction (8A, *7D^*)
	Semester Exam/District Created CBA Early Release 12/19

Year-at-a-Glance 25-26	Subject	Biology (On Level and Honors)

	Second Semester Instruction
3rd Nine Weeks	**Unit 7: Genetics** BB 1: Mendelian Genetics (**8B,** *7D^*) BB 2: Non-mendelian Genetics (**8B**)
	Unit 8: Evolution BB 1: Evidence of Evolution & Origin of DNA (9A, 7A*, *7D^*) BB 2: Evolutionary Rate (**9B**) BB 3: Natural Selection & Speciation (10A, 10B, **10C**) BB 4: Mechanisms of Evolution (10D)
	Unit 9: Animal Systems BB 1: Animal System Interactions (12A, 5C*, 5D*, **11B***)
	Unit 10: Plant Systems BB 1: Plant Cell Energy Recap (11A*) BB 2: Plant Systems (**12B**)
4th 9 Weeks	**Unit 11: Ecological Stability** BB 1: Flow of Energy (13B) BB 2: Symbiotic Relationships (13A) BB 3: Matter Cycles and Disruptions (13C, **13D**, 11A*)
	Unit 12: Biology EOC BLITZ Review
	Unit 13: Biotech and Beyond BB 1: Biotechnology (7D) BB2: Innovation & Impact in Life Science
	Unit 14: Bridge to Chemistry
	Semester Exam **Early Release 5/21**