HENRY COUNTY SCHOOLS
Biology Curriculum Map

	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS / ENDURING UNDERSATNDINS	SKILLS	ASSESSMENTS	RESOURCES
1 week	**Unit 1: Introduction of Biology** SB4.f, SB5.d, SB2.f	Unit 1 EQ 1. What are the characteristics of life? 2. What are the major themes in biology? 3. What are standard safety practices? 4. How does biology impact? 5. What are the key components to experimental design? 6. What are the correct procedures for using scientific apparatus? **Unit 1 EU** 1) All living organisms have certain characteristics in common. 2) Safety practices must be observed when using scientific apparatus during experimentation. 3) Scientific processing skills can be used to solve a vast array of problems.	Unit 1 • Measurement* • Conversion • Experimental design • Microscope use • Data analysis • Formal lab write-up	**Biology CFA Folder**	*Text* Ch. 1 Biology in the 21st Century *EOCT Coach* Lessons 1-8 Textbook chapter 1 Writing Activities (formal lab write-up, journal entry, outline section or chapter, word maps, define words from chapter, teaching word parts to learn vocabulary) Reading Activities (Outline section or chapter) Differentiation Low (Interactive reader p. 2, section 1.2) Medium (Study Guide, Unit resource book. 5-6) High (pre-AP activity, Unit resource book, p. 23-24) ESOL (Audio CD, Spanish CD, Ch.1 section 2; Spanish study guide; English Learners Activity TE p.7 & 8)

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	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS	RESOURCES
2 weeks	**Unit II: Chemistry of Life** **SB1.b.c.d**	Unit II EQ 1. How are atoms, compounds, & molecules related? 2. How do the unique properties of H_2O affect life? 3. What are the properties, structures & functions of organic macromolecules? 4. How do enzymes function as catalysts? Unit II EU 1) All matter is composed of atoms joined together to make molecules and compounds that comprise the building blocks of life. 2) Proteins, carbohydrates, lipids, and nucleic acids have different structures and functions that are responsible for the diversity of all living things. 3) Water is a universal solvent, essential for life because of its unique properties. 4) Enzymes are biological catalysts that control chemical reactions in living organisms.	Unit II • Atomic bonding • Evaluate properties of H_2O in a lab setting with an emphasis on living systems. • Synthesizing & breaking down organic macromolecules. • Modeling macromolecule functions & relating them to biological systems. • Demonstrate enzyme activity in a lab setting.	**Biology CFA Folder**	*Text* Ch. 2 Chemistry of Life *EOCT Coach* Lessons 9-13

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3 weeks	**Unit III: Cells** **SB.1.a, SB1.d, SB.3 all, SB2.e**	Unit III EQ 1. How do cell structures & functions contribute to the maintenance of homeostasis? 2. How is energy cycled in living organisms (ie: cellular respiration & photosynthesis) 3. How & why do cells reproduce? (Cycle of cell by mitosis). Unit III EU 1) Homeostasis involves the transport of materials in cells in an organism to maintain conditions necessary for life. 2) Energy conversion within an organism such as photosynthesis, respiration, and fermentation are processes that maintain life. 3) Cell reproduction is vital for growth, development, and repair in some organisms.	Unit III • Cell Mitosis dance • Describe the functions of cell organelles • Describe the biochemical pathways of photosynthesis & cellular respiration. • Model the process of cell reproduction.	**Biology CFA Folder**	*Text* Ch. 3 Cell Structure & Function Ch. 4: Cells & Energy Ch. 5: Cell Growth & Function *EOCT Coach* Lessons 14-18

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	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS	RESOURCES
3 Weeks	**Unit IV: Genetics** **SB1.a, SB1.b, SB2.a-f**	Unit IV EQ 1. What are the pros and cons of sexual and asexual reproduction 2. How is DNA organized in prokaryotic and eukaryotic cells? 3. What are the differences between DNA & RNA? 4. What is the role of DNA in heredity (DNA-RNA-to proteins)? 5. What is the relationship between changes in DNA & the potential appearance of new traits (types of mutation)? 6. What are factors that can cause changes on DNA? 7. How is DNA technology used in medicine, agriculture, and forensics? Unit IV EU 1) DNA/RNA encode proteins that produce a diverse range of traits. 2) Independent assortment and crossing over during meiosis results in genetic diversity. 3) Mutations are changes in DNA that may or may not affect phenotype. 4) DNA is identified as the genetic material in all cells and transcription converts genes into a RNA molecule. 5) DNA technology is used in medicine, agriculture, and forensics to enhance life.	Unit IV • Analyze the advantages of sexual & asexual reproduction in various situations • DNA organization • Identify the role of DNA in cell reproduction • Compare & contrast RNA & DNA • Analyze the roles of DNA & RNA in protein synthesis • Identify types of mutations & give examples • Compare & contrast chromosome mutations & genetic mutation • Create & interpret Punnett/squares to determine genotypic & phenotypic ratios • Modeling methods of DNA technology.	**Biology CFA Folder**	*Text* Ch. 6 Meiosis and Mendel Ch. 7 Extending Mendelian Genetics Ch. 8 From DNA to Proteins Ch. 9 Frontiers of Biotechnology *EOCT Coach* Lessons 19-25

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	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS	RESOURCES
1 Week	**Unit V: Evolution** **SB5.a-e**	**Unit V EQ** 1. How has the theory of evolution impacted current understanding of biodiversity? 2. How are populations affected by environmental pressures? 3. What types of evidence are used to support evolution? **4.** What role does evolution play in biological resistance? Unit V EU 1) Characteristics influence the "fitness" of a species within an environment. 2) Chemical resistance and mutation may produce adaptations that are the basis of natural selection. 3) Evidence from multiple sources supports the theory of evolution and explains earth's biodiversity.	**Unit V** Apply and examine the principles of natural selection in populations. Trace the development of the theory of evolution. Understand the importance of Hardy-Weinberg Principle. Identify and differentiate between the different types of selection. Interpret diagrammatic representations of phylogeny. Evaluate the evidence used to support the theory of evolution (embryology, homology, fossil record, biochemical, and genetic evidence)	**Biology CFA Folder**	*Text* Ch. 10 Principles of Evolution Ch. 11 The Evolution of Populations Ch. 12 The History of Life *EOCT Coach* Lessons 39-43

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	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS	RESOURCES
1 Week	**Unit VI: Classification** **SB3.b.c**	**Unit VI EQ** 1. How have scientists arrived at the modern system of taxonomy? 2. What are the characteristics of organisms in the six kingdom classification system? Unit VI EU 1) Modern classification provides a means for organization of biodiversity based upon evolutionary history. 2) The modern Linnean classification system is comprised of 6 kingdoms based upon similar characteristics.	**Unit VI** Use a dichotomous key to identify organisms. Apply the levels of taxonomy to determine relatedness or organisms. Differentiate between the six kingdoms.	**Biology CFA Folder**	*Text* Ch 17 The Tree of Life *EOCT Coach* Lesson 28-29

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3 Weeks	**Unit VII: Ecology** SB4.a-e SB3.a	**Unit VII EQ** 1. How are nutrients and energy cycled through an ecosystem? 2. How are hierarchical levels of ecology interrelated? 3. How do organisms show interdependence in an ecosystem? 4. How do human activities impact the environment? 5. How do environmental conditions shape successional changes in an ecosystem? 6. What adaptations do organisms exhibit in response to stressful environmental conditions? 7. What are the differences between the ecological landscapes (biomes)? Unit VII EU 1) All organisms are dependent on the flow of matter and energy within an ecosystem. 2) Relationships exist among organisms, populations, communities, and ecosystems. 3) Biomes are characterized by unique biotic and abiotic factors. 4) Human activities can adversely or positively impact the environment. 5) Organisms possess unique characteristics and behaviors that sustain life.	**Unit VII** Evaluate the interdependence of an ecosystem. Model the hierarchical levels of ecology. Differentiate between types of symbiotic relationships. Compare the characteristics of major biomes. Relate adaptations to the survival of organisms. Analyze the transfer of energy and matter through an ecosystem. Sequence the changes that occur in an ecosystem during primary and secondary succession.	**Biology CFA Folder**	*Text* Ch.13 Principles of Ecology Ch. 14 Interactions in Ecosystems Ch. 15 The Biosphere Ch. 16 Human Impact on Ecosystems *EOCT Coach* Lessons 31-38

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	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS	RESOURCES
1 Weeks	**Unit VIII: Organisms** **SB3.b-d**	**Unit VIII EQ** What are the various ways that organisms obtain energy? What are the mechanisms for energy conversion in organisms? How do viruses compare to living organisms? What are identifying characteristics of distinct groups of organisms? What evolutionary changes are observed in various groups of organisms? Unit VIII EU 1) All organisms need energy to carry out life processes. 2) The classification of organisms is a dynamic process. 3) Various sources of data are used to establish evolutionary relationships among organisms.	**Unit VIII** Identify how energy is obtained by an organism. Describe the conversion of energy within the organism. Recognize the increasing complexity of organisms, progressing from a cell to an organism. Recognize evolutionary relationships between organisms. Compare and contrast viruses with living organisms.	**Biology CFA Folder**	Text Select content from Ch.18-27 EOCT Coach Lessons 28, 30