

Biology 1

Syllabus 2026-2027

Teacher Name: Jeremy Kelly

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Teacher Availability:

7:15-7:45 every day, after 3:00 by appointment, and during 5th Block by appointment

Classroom Rules and Expectations/Discipline Policy:

- Be On Time
 - Come in, Put Cell phone in assigned slot, Get a textbook, Sit in your assigned seat and get out your Chromebook, Begin Bellwork
- Be Prepared
 - Bring ALL necessary materials to class with you!
- Be Respectful
 - Treat others as you would like to be treated.
- You are also expected to follow all other Giles County High School rules and policies.
- Tardies will be written up as a disciplinary action. It is your responsibility to be in class on time!
- If you have a cell phone during class, it will be taken to administration and kept until the end of the day!

Grading Policy:

Assessments(tests and quizzes)/Projects.....45%

Classwork/Homework.....55%

Assignments turned in late will have 10 points deducted for each day they are late.

Instructional Materials:

*Giles County High School will make instructional materials available for review within 10 days of a written parental request.

Classroom Supply List

- 1" Binder with pockets
- Paper
- Pencils
- 12 pack colored pencils
- Charged Chromebook

Major Assignments:

Students will have numerous formative assessments throughout the semester to check for understanding of the material. These will be in the form of orally answering questions during class, essay writing assignments, and practice assignments. At the end of each unit, there will be a summative assessment given. This will be in the form of tests or quizzes that include multiple choice, short answer, true/false, matching, drawing and labeling, and long answer questions. There will also be some labs/projects that apply the concepts that we are learning in class. The class will culminate in the state End of Course test.

Standards/Topics Covered & Course Calendar:

Semester at a Glance (SAG)

Subject/Grade Biology 1

Unit	Time Frame	Standards	Major Topics/Concepts	CFA
Module 1: The Study of Life	1st Q	BIO1.LS1.1 BIO1.LS1.2 BIO1.LS1.3 BIO1.LS2.4 BIO1.LS4.4	In this module, students explore the foundational principles of biology by examining the nature of science and scientific practices. They will learn how scientific investigations are structured, including the formulation of hypotheses, the design of experiments, and the analysis of data. Emphasis is placed on distinguishing between observations and inferences, understanding the importance of peer review, and recognizing how scientific knowledge evolves over time. Students will also be introduced to key characteristics of life and how biologists organize and study the diversity of living organisms. This module sets the stage for future units by building critical thinking and inquiry skills essential to scientific literacy.	Week 1 McGraw Hill Module Test
Module 2: Principles of Ecology	1st Q	BIO1.LS1.4 BIO1.LS1.5 BIO1.LS1.6 BIO1.LS2.1 BIO1.LS2.2	In this module, students explore how organisms interact with each other and their environments, emphasizing ecological relationships such as predation, competition, and symbiosis. They will analyze how energy flows through ecosystems via food chains, food webs, and ecological pyramids, applying the 10% Rule to understand energy loss between trophic levels. Students will also examine the cycling of matter through key biogeochemical processes including the water, carbon, and nitrogen cycles. Emphasis is placed on understanding how these cycles sustain life and how human activity can disrupt ecosystem balance.	Week 2 McGraw Hill Module Test
Module 3: Communities, Biomes, and Ecosystems	1st Q	BIO1.LS2.3	This module introduces students to community ecology by exploring how populations interact and change over time through ecological succession. Students will examine the characteristics of major terrestrial biomes—including forests, deserts, tundras, and grasslands—focusing on climate, vegetation, and biodiversity. The module also includes aquatic ecosystems, highlighting differences between freshwater and marine environments, zones within aquatic habitats, and how abiotic and biotic factors influence community structure. Students will evaluate how ecosystems respond to natural and human-induced changes.	Week 3 McGraw Hill Module Test

Module 4: Population Ecology	1st Q	BIO1.LS2.1	In this module, students analyze factors that affect population size and structure in natural environments. They will explore concepts such as population density, dispersion patterns, and growth models—including exponential and logistic growth. Students will investigate limiting factors, carrying capacity, and how populations respond to environmental pressures. The module also includes an examination of human population growth, evaluating trends, impacts on resources, and challenges to sustainability.	Week 4 McGraw Hill Module Test
Module 5: Biodiversity and Conservation	1st Q	BIO1.LS2.3 BIO1.LS2.4	This module emphasizes the importance of biodiversity in maintaining ecosystem stability and resilience. Students will explore the different levels of biodiversity—genetic, species, and ecosystem—and analyze how each contributes to the health of the biosphere. The module also examines major threats to biodiversity, including habitat loss, pollution, climate change, invasive species, and overexploitation. Students will evaluate conservation strategies such as habitat preservation, legislation, and sustainable practices aimed at protecting endangered species and restoring ecosystems.	Week 5 McGraw Hill Module Test
Module 6: Chemistry in Biology	1st Q	BIO1.LS1.1 BIO1.LS1.5	This module introduces students to the chemical foundations of life. Students will learn about the structure of atoms, elements, and compounds, and how chemical reactions are essential to biological processes. Emphasis is placed on the properties of water, including polarity, hydrogen bonding, and its role as a universal solvent. Students will explore the structure and function of the four major classes of biological macromolecules—carbohydrates, lipids, proteins, and nucleic acids—and understand how these molecules contribute to the structure and function of cells.	Week 6 McGraw Hill Module Test
Module 7: Cellular Structure and Function	1st Q	BIO1.LS1.1 BIO1.LS1.4 BIO1.LS1.2	In this module, students explore the development of cell theory and the discovery of cells through advances in microscopy. They will examine the structure and function of the plasma membrane, focusing on its role in maintaining homeostasis through selective permeability and transport mechanisms such as diffusion, osmosis, and active transport. The module also covers the differences between prokaryotic and eukaryotic cells and details the functions of key organelles including the nucleus, mitochondria, endoplasmic reticulum, Golgi apparatus, and chloroplasts.	Week 7 McGraw Hill Module Test
Module 8: Cellular Energy	1st Q	BIO1.LS2.2 BIO1.LS1.4 BIO1.LS1.6	This module focuses on how living organisms capture, store, and utilize energy. Students will explore the processes of photosynthesis and cellular respiration, comparing how autotrophs convert solar energy into chemical energy and how both autotrophs and heterotrophs extract energy from food. The module emphasizes the role of ATP as the cell's energy currency, the transformation of energy through metabolic pathways, and the interdependence of these two processes in the cycling of matter and flow of energy within ecosystems.	Week 8 McGraw Hill Module Test
Module 9: Cellular Reproduction and Sexual Reproduction	2nd Q	BIO1.LS1.1 BIO1.LS3.4 BIO1.LS3.2 BIO1.LS3.1 BIO1.LS1.3	This module explores how cells reproduce to maintain life and ensure genetic continuity. Students will examine the stages of the cell cycle, including interphase, mitosis, and cytokinesis, and analyze how these processes allow for growth, repair, and asexual reproduction. The module also introduces meiosis as the process that produces gametes, emphasizing the role of sexual reproduction in increasing genetic diversity. Key comparisons between mitosis and meiosis help students understand inheritance, chromosome behavior, and the foundations of	Week 9 McGraw Hill Module Test

			genetics.	
Module 10: Introduction to Genetics and Patterns of Inheritance	2nd Q	BIO1.LS3.4 BIO1.LS3.3	This module introduces students to Mendelian genetics and the principles of heredity. Students will explore how traits are passed from parents to offspring through dominant and recessive alleles, and apply Punnett squares to predict genotype and phenotype probabilities. The module also covers more complex inheritance patterns, including incomplete dominance, codominance, polygenic traits, and sex-linked traits. Additional topics include gene linkage, crossing over, and how recombination contributes to genetic variation. Students will also examine applied genetics through pedigree analysis and the study of human genetic disorders.	Week 10 McGraw Hill Module Test
Module 11: Molecular Genetics	2nd Q	BIO1.LS1.1 BIO1.LS3.4	In this module, students investigate the molecular basis of heredity. They will study the structure and function of DNA as the genetic material, including the double helix model and complementary base pairing. Students will analyze the process of DNA replication and how it ensures genetic continuity. The module also covers transcription and translation—explaining how genetic information is used to synthesize proteins. Additional focus is placed on gene regulation, mutations, and the impact of changes in DNA on cellular function and organism traits.	Week 11 McGraw Hill Module Test
Module 12: The History of Life	2nd Q	BIO1.LS4.1	This module explores the scientific evidence for the origin and development of life on Earth. Students will examine the fossil record and how it provides insight into the changes in biodiversity over time. Topics include dating techniques, the geologic time scale, and mass extinction events. Students will also investigate hypotheses about the origins of life, including the formation of simple organic molecules and protocells, and evaluate the role of early environmental conditions in shaping evolutionary pathways.	Week 12 McGraw Hill Module Test
Module 13: Evolution	2nd Q	BIO1.LS4.1 BIO1.LS4.2 BIO1.LS4.3 BIO1.LS4.4 BIO1.LS4.5 BIO1.LS3.4	In this module, students explore Charles Darwin’s theory of evolution by natural selection as the central explanation for the diversity of life. They will analyze the mechanisms of natural selection, including variation, adaptation, and survival of the fittest. Students will examine multiple lines of evidence for evolution—such as fossil records, comparative anatomy, embryology, and molecular biology. The module also covers how scientific theories evolve over time, incorporating new discoveries and perspectives to refine our understanding of evolutionary processes.	Week 13 McGraw Hill Module Test