

BIOLOGY I

CREDIT 1

GRADE 9

PREREQUISITE NONE

Standards include studies of the cell, microscope, interaction of living organisms, study of photosynthesis and respiration, genetics, diversity of organisms, and biological evolution. The laboratory section of the course includes, but is not limited to, a group of hands-on, interactive activities recommended by the state to help prepare students to pass the EOC exam. **NOTE: This course is required for graduation.**

State Standards for Biology I may be found here:

<https://www.tn.gov/education/article/science-standards>

Embedded Standards

Embedded standards are skills and processes used in the real work of science and support and enhance classroom instruction.

- Select a description or scenario that reevaluates and /or extends a scientific finding.
- Analyze the components of a properly designed scientific investigation.
- Determine appropriate tools to gather precise and accurate data.
- Evaluate the accuracy and precision of data.
- Defend a conclusion based on scientific evidence.
- Determine why a conclusion is free of bias.
- Compare conclusions that offer different, but acceptable explanations for the same set of experimental data
- Distinguish among tools and procedures best suited to conduct a specified scientific inquiry.
- Evaluate a protocol to determine the degree to which an engineering design process was successfully applied.
- Evaluate the overall benefit to cost ratio of a new technology.
- Use the design principles to determine if a new technology will improve the quality of life for an intended audience.
- Interpret a graph that depicts a biological phenomenon.
- Predict the outcome of a cross between parents of known genotype.

First Nine Weeks

- Interpret a diagram that illustrates energy flow in an ecosystem
- Predict how population changes of organisms at different trophic levels affect an ecosystem.
- Interpret the relationship between environmental factors and fluctuations in population size.
- Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.
- Predict how various types of human activities affect the environment

- Make inferences about how a specific environmental change can affect the amount of biodiversity.
- Predict how changes in a biogeochemical cycle can affect an ecosystem.
- Predict how a specific environmental change may lead to the extinction of a particular species.
- Analyze factors responsible for the changes associated with biological succession.
- Distinguish between aerobic and anaerobic respiration
- Compare and contrast photosynthesis and cellular respiration in terms of energy transformation.
- Identify the cellular organelles associated with major cell processes.
- Distinguish between prokaryotic and eukaryotic cells.
- Distinguish among proteins, carbohydrates, lipids, and nucleic acids.
- Identify a positive test for carbohydrates, lipids and proteins.
- Identify how enzymes control chemical reactions in the body.
- Predict the movement of water and other molecules across selectively permeable membranes.
- Compare and contrast active and passive transport.
- Determine the relationship between cell growth and cell reproduction.
- Describe how meiosis is involved in the production of egg and sperm cells.
- Describe how meiosis and sexual reproduction contribute to genetic variation in a population.

***Common Formative Assessment #1**

***Common Formative Assessment #2**

***Common Formative Assessment #3**

Second Nine Weeks

- Identify the structure and function of DNA
- Associate the process of DNA replication with its biological significance
- Recognize the interactions between DNA and RNA during protein synthesis
- Determine the probability of a particular trait in an offspring based on the genotype of the parents and the particular mode of inheritance.
- Apply pedigree data to interpret various modes of genetic inheritance.
- Determine the relationship between mutations and human genetic disorders.
- Evaluate the scientific and ethical issues associated with gene technologies: genetic engineering, cloning, transgenic organism production, stem cell research, and DNA fingerprinting.
- Compare and contrast the structural, functional, and behavioral adaptations of animals or plants found in different environments.
- Recognize the relationship between form and function in living things.
- Recognize the relationships among environmental change, genetic variation, natural selection, and the emergence of a new species.

- Describe the relationship between the amount of biodiversity and the ability of a population to adapt to a changing environment.
- Apply evidence from the fossil record, comparative anatomy, amino acid sequence and DNA structure that support modern classification systems.
- Infer relatedness among different organisms using modern classification systems.

***Common Formative Assessment #4**

***Common Formative Assessment #5**

For information regarding instructional objectives and materials, please contact the school principal.

*Common assessments are scheduled within the nine weeks. Each school may adjust the week and/or day of the week to meet the individual school's schedule.

*Common assessments may be rescheduled due to inclement weather.