

Campbell County Schools

Biology I

2ND Nine Weeks-at-a-Glance

The following skills should be the focus for this Nine Weeks:

Standard 4: Heredity	
Heredity Information	<p>CLE 3210.4.2 Describe the relationships among genes, chromosomes, proteins, and hereditary traits.</p> <ul style="list-style-type: none"> • SPI 3210.4.2 Associate the process of DNA replication with its biological significance. <p>CLE 3210.4.3 Predict the outcome of monohybrid and dihybrid crosses.</p> <ul style="list-style-type: none"> • SPI 3210.4.4 Determine the probability of a particular trait in an offspring based on the genotype of the parents and the particular mode of inheritance. <p>CLE 3210.4.4 Compare different modes of inheritance: sex linkage, co-dominance, incomplete dominance, multiple alleles, and polygenic traits.</p> <ul style="list-style-type: none"> • SPI 3210.4.5 Apply pedigree data to interpret various modes of genetic inheritance. <p>CLE 3210.4.6 Describe the connection between mutations and human genetic disorders.</p> <ul style="list-style-type: none"> • SPI 3210.4.8 Determine the relationship between mutations and human genetic disorders. <p>CLE 3210.4.7 Assess the scientific and ethical ramifications of emerging genetic technologies</p> <ul style="list-style-type: none"> • SPI 3210.4.9 Evaluate the scientific and ethical issues associated with gene technologies: genetic engineering, cloning, transgenic organism production, stem cell research, and DNA fingerprinting.
Standard 5: Biodiversity and Change	
Evidence of Change	<p>CLE 3210.5.4 Summarize the supporting evidence for the theory of evolution</p> <ul style="list-style-type: none"> • SPI 3210.5.5 Apply evidence from the fossil record, comparative anatomy, amino acid sequences, and DNA structure that support modern classification systems.
Adaptation	<p>CLE 3210.5.1 Associate structural, functional, and behavioral adaptations with the ability of organisms to survive under various environmental conditions.</p> <ul style="list-style-type: none"> • SPI 3210.5.1 Compare and contrast the structural, functional, and behavioral adaptations of animals or plants found in different environments. <p>CLE 3210.5.2 Analyze the relationship between form and function in living things.</p> <ul style="list-style-type: none"> • SPI 3210.5.2 Recognize the relationship between form and function in living things.
Diversity	<p>CLE 3210.5.3 Explain how genetic variation in a population and changing environmental conditions are associated with adaptation and the emergence of new species.</p> <ul style="list-style-type: none"> • SPI 3210.5.3 Recognize the relationships among environmental change, genetic variation, natural selection, and the emergence of a new species <p>CLE 3210.5.5 Explain how evolution contributes to the amount of biodiversity.</p> <ul style="list-style-type: none"> • SPI 3210.5.4 Describe the relationship between the amount of biodiversity and the ability of a population to adapt to a changing environment. <p>CLE 3210.5.6 Explore the evolutionary basis of modern classification systems</p> <ul style="list-style-type: none"> • SPI 3210.5.6 Infer relatedness among different organisms using modern classification systems.

Embedded Inquiry Checks for Understanding

- ✓ **3210.Inq.1** Trace the historical development of a scientific principle or theory, such as cell theory, evolution, or DNA structure.
- ✓ **3210.Inq.2** Conduct scientific investigations that include testable questions, verifiable hypotheses, and appropriate variables to explore new phenomena or verify the experimental results of others.
- ✓ **3210.Inq.3** Select appropriate tools and technology to collect precise and accurate quantitative and qualitative data.
- ✓ **3210.Inq.4** Determine if data supports or contradicts a hypothesis or conclusion.
- ✓ **3210.Inq.5** Compare or combine experimental evidence from two or more investigations.
- ✓ **3210.Inq.6** Recognize, analyze, and evaluate alternative explanations for the same set of observations.
- ✓ **3210.Inq.7** Analyze experimental results and identify possible sources of experimental error.
- ✓ **3210.Inq.8** Formulate and revise scientific explanations and models using logic and evidence.

Embedded Technology & Engineering Checks for Understanding

- ✓ **93210.T/E.1** Select appropriate tools to conduct a scientific inquiry.
- ✓ **93210.T/E.2** Apply the engineering design process to construct a prototype that meets developmentally appropriate specifications.
- ✓ **93210.T/E.3** Explore how the unintended consequences of new technologies can impact human and non-human communities.
- ✓ **93210.T/E.4** Present research on current bioengineering technologies that advance health and contribute to improvements in our daily lives.
- ✓ **93210.T/E.5** Design a series of multi-view drawings that can be used by other students to construct an adaptive design and test its effectiveness.

Embedded Mathematics Checks for Understanding

- ✓ **3210.Math.1** Choose and construct appropriate graphical representations for a data set.
- ✓ **3210.Math.2** Analyze graphs to interpret biological events.
- ✓ **3210.Math.3** Make decisions about units, scales, and measurement tools that are appropriate for investigations involving measurement.
- ✓ **3210.Math.4** Select and apply an appropriate method to evaluate the reasonableness of results.
- ✓ **3210.Math.5** Apply and interpret rates of change from graphical and numerical data.
- ✓ **3210.Math.6** Apply probabilistic reasoning to solve genetic problems.

Standard 1 – Cells Checks for Understanding

- ✓ **3210.1.1** Investigate cells using a compound microscope.
- ✓ **3210.1.2** Construct a model of a prokaryotic or eukaryotic cell.
- ✓ **3210.1.3** Design a graphic organizer that compares proteins, carbohydrates, lipids, and nucleic acids.
- ✓ **3210.1.4** Conduct tests to detect the presence of proteins, carbohydrates, and lipids.
- ✓ **3210.1.5** Design a model that illustrates enzyme function.
- ✓ **3210.1.6** Demonstrate the movement of chromosomes during mitosis in plant and animal cells.
- ✓ **3210.1.7** Design and conduct an experiment to investigate the effect of various solute concentrations on water movement in cells.
- ✓ **3210.1.8** Analyze experimental data to distinguish between active and passive transport.

Standard 2 – Interdependence Checks for Understanding

- ✓ **3210.2.1** Analyze human population distribution graphs to predict the impact on global resources, society, and the economy.
- ✓ **3210.2.2** Construct and maintain a model of an ecosystem.
- ✓ **3210.2.3** Monitor and evaluate changes in a yeast population.
- ✓ **3210.2.4** Investigate an outdoor habitat to identify the abiotic and biotic factors, plant and animal populations, producers, consumers, and decomposers.
- ✓ **3210.2.5** Conduct research on how human influences have changed an ecosystem and communicate findings through written or oral presentations.
- ✓ **3210.2.6** Describe a sequence of events that illustrates biological succession.

Standard 3 – Flow of Matter and Energy Checks for Understanding

- ✓ **3210.3.1** Track energy flow through an ecosystem.
- ✓ **3210.3.2** Construct a concept map to differentiate between aerobic and anaerobic respiration.
- ✓ **3210.3.3** Conduct experiments to investigate photosynthesis and cellular respiration.
- ✓ **3210.3.4** Investigate the process of fermentation.
- ✓ **3210.3.5** Construct models of the carbon, oxygen, nitrogen, phosphorous, and water cycles.

Standard 4 - Heredity Checks for Understanding

- ✓ **3210.4.1** Use models of DNA, RNA, and amino acids to explain replication and protein synthesis.
- ✓ **3210.4.2** Complete and interpret genetic problems that illustrate sex linkage, co- dominance, incomplete dominance, multiple alleles, and polygenic inheritance.
- ✓ **3210.4.3** Apply data to complete and interpret a genetic pedigree
- ✓ **3210.4.4** Describe how the process of meiosis controls the number of chromosomes in a gamete.
- ✓ **3210.4.5** Associate gene mutation with changes in a DNA molecule.
- ✓ **3210.4.6** Design an informational brochure to describe a human genetic disorder.
- ✓ **3210.4.7** Conduct research to explore the scientific and ethical issues associated with emerging gene technologies.

Standard 5 Biodiversity and Change Checks for Understanding

- ✓ **3210.5.1** Create graphic organizers to demonstrate the relationship between form and function in representative organisms.
- ✓ **3210.5.2** Explain how natural selection operates in the development of a new species.
- ✓ **3210.5.3** Associate fossil data with biological and geological changes in the environment.
- ✓ **3210.5.4** Analyze a variety of models, samples, or diagrams to demonstrate the genetic relatedness of organisms.
- ✓ **3210.5.5** Use a dichotomous key to identify an unknown organism.

