Flagler County Biology, Biology Honors, Pre-IB Biology, Pre-AICE Biology
2025-2026 Scope and Sequence

Year at a glance: Please note that the map is based on a 180-day schedule.

Quarter 1: August 11, 2025- October 10, 2025	
Topics	Benchmark/ Standards
Scientific Method	SC.912.N.1.3 Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented. SC.912.N.1.4 Identify sources of information and assess their reliability according to the strict standards of scientific investigation. SC.912.N.1.6 Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied. SC.912.N.2.1 Identify what is science, what clearly is not science, and what superficially resembles SC.912.N.2.2 Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion. SC.912.N.3.1 Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer. SC.912.N.3.4 Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions.
Water Properties	SC.912.L.18.12 Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.
Macromolecules and Enzymes	SC.912.L.18.1

Cell Theory Microscopes Cell Structure and Function Cell Membrane/Transport	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules. SC.912.L.18.10 Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell. ● ATP will be introduced related to organelle function (mitochondria) and macromolecules (Nucleic Acids) ● The main focus on ATP will be covered in Q2 when cover Cellular Respiration SC.912.L.18.11 Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity. SC.912.L.14.1 Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the process of science. SC.912.L.14.4 Compare and contrast structure and function of various types of microscopes. SC.912.L.14.2 Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport). SC.912.L.14.3 Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells
Quarter 2: October 14, 2025-December 19, 2025	
Topics	Benchmark/ Standards
Photosynthesis/Cell Respiration/ATP Plants/Organs and Tissue	SC.912.L.18.7 Identify the reactants, products, and basic functions of photosynthesis. SC.912.L.18.8 Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration. SC.912.L.18.9 Explain the interrelated nature of photosynthesis and cellular respiration. SC.912.L.18.10 Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell. SC.912.L.14.6 Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health. SC.912.L.14.7

Cell Cycle/Mitosis Meiosis Genetics	Relate the structure of each of the major plant organs and tissues to physiological processes. SC.912.L.16.8 Explain the relationship between mutation, cell cycle, and uncontrolled cell growth potentially resulting in cancer. SC.912.L.16.14 Describe the cell cycle, including the process of mitosis. Explain the role of mitosis in the formation of new cells and its importance in maintaining chromosome number during asexual reproduction. SC.912.L.16.16 Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores. SC.912.L.16.17 Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation. SC.912.L.16.1 Use Mendel's laws of segregation and independent assortment to analyze patterns of inheritance. SC.912.L.16.2 Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.
Quarter 3: January 7, 2026- March 12, 2026	
Topics	Benchmark/ Standards
DNA/RNA/Protein Synthesis Biotechnology Evolution History/Evidence Hominid Evolution	SC.912.L.16.3 Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic information. SC.912.L.16.4 Explain how mutations in the DNA sequence may or may not result in phenotypic change. Explain how mutations in gametes may result in phenotypic changes in offspring. SC.912.L.16.9 Explain how and why the genetic code is universal and is common to almost all organisms. SC.912.L.16.5 Explain the basic processes of transcription and translation, and how they result in the expression of genes. SC.912.L.16.10 Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues. SC.912.L.15.1 Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change. SC.912.L.15.10 Identify basic trends in hominid evolution from early ancestors six million years ago to modern humans, including brain size, jaw size, language, and manufacture of tools. SC.912.L.15.4 Describe how and why organisms are hierarchically classified and based on evolutionary relationships.

Natural Selection Taxonomy	SC.912.L.15.13 Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success. SC.912.L.15.14 Discuss mechanisms of evolutionary change other than natural selection such as genetic drift and gene flow. SC.912.L.15.15 Describe how mutation and genetic recombination increase genetic variation. SC.912.L.15.5 Explain the reasons for changes in how organisms are classified. SC.912.L.15.6 Discuss distinguishing characteristics of the domains and kingdoms of living organisms. SC.912.L.15.8 Describe the scientific explanations of the origin of life on Earth.
Quarter 4: March 23, 2026- May 28, 2026	
Topics	Benchmark/ Standards
	SC.912.L.17.2 Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature. SC.912.L.17.4 Describe changes in ecosystems resulting from seasonal variations, climate change and succession. SC.912.L.17.5 Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity. SC.912.L.17.8 Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species. SC.912.L.17.9 Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. SC.912.L.17.11 Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests. SC.912.L.17.13 Discuss the need for adequate monitoring of environmental parameters when making policy decisions. SC.912.L.17.20 Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability. SC.912.L.14.26 Identify the major parts of the brain on diagrams or models SC.912.L.14.36 Describe the factors affecting blood flow through the cardiovascular system. SC.912.L.14.52 Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics. SC.912.L.16.13 Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy.