MOBILE COUNTY PUBLIC SCHOOLS
DIVISION OF CURRICULUM & INSTRUCTION
PACING GUIDE AT A GLANCE
2017- 2018
Subject: _____**Biology Honors**_____

Standard #	Quarter	Standards/Objectives
18	1 & 3	Develop and use models to illustrate how subatomic particles are arranged in atoms while displaying the differences between ions and atoms. Develop and use models to explain the types of bonding between atoms to form molecules.
5a	1 & 3	Plan and carry out investigations to explain how the unique properties of water (e.g., polarity, cohesion, adhesion) are vital to maintaining homeostasis in organisms.
1	1 & 3	Use models to compare and contrast how the structural characteristics of carbohydrates, nucleic acids, proteins, and lipids define their function in organisms. a. Describe the function of enzymes, including how enzyme-substrate specificity works, in biochemical reactions.
2	1 & 3	Obtain, evaluate, and communicate information to describe the function and diversity of organelles and structures in various types of cells (e.g., muscle cells having a large amount of mitochondria, plasmids in bacteria, and chloroplasts in plant cells). a. Describe the biological criteria that need to be met in order for an organism to be considered alive.
5	1 & 3	Plan and carry out investigations to explain feedback mechanisms (e.g., sweating and shivering) and cellular processes (e.g., active and passive transport) that maintain homeostasis. a. Plan and carry out investigations to explain how the unique properties of water (e.g., polarity, cohesion, adhesion) are vital to maintaining homeostasis in organisms. b. Explain the fundamental principles of the pH scale and the consequences of having the different concentrations of hydrogen and hydroxide ions. c. Explain how the cell membrane controls movement of substances both into and out of the cell and within the cell, how the cell membrane maintains homeostasis, and the structure and function of sub-cellular components of motility (e.g., cilia, flagella, pseudopodia)
6	1 & 3	Analyze and interpret data from investigations to explain the role of products and reactants of photosynthesis and cellular respiration in the cycling of matter and flow of energy. a. Plan and carry out investigations to explain the interactions among pigments, absorption of light, and reflection of light.
4	1 & 3	Develop and use models to explain the role of the cell cycle during growth and maintenance in multicellular organisms (e.g. normal growth and/or uncontrolled growth resulting in tumors).
12	1 & 3	Develop and use a model to analyze the structure of chromosomes and how new genetic combinations occur through the process of meiosis.
3	2 & 4	Formulate an evidence-based explanation regarding how the composition of deoxyribonucleic acid (DNA) determines the structural organization of proteins. a. Obtain and evaluate experiments of major scientists and communicate their contributions to the development of the structure of DNA and to the development of the central dogma of molecular biology. b. Obtain, evaluate, and communicate information that explains how advancements in genetic technology (e.g., Human Genome Project, Encyclopedia of DNA Elements [ENCODE] project, 1000 Genomes Project) have contributed to the understanding as to how a genetic change at the DNA level may affect proteins and, in turn, influence the appearance of traits. c. Obtain information to identify errors that occur during DNA replication (e.g., deletion, insertion, translocation, substitution, inversion, frame-shift, point mutations).

MOBILE COUNTY PUBLIC SCHOOLS
DIVISION OF CURRICULUM & INSTRUCTION
PACING GUIDE AT A GLANCE
2017- 2018
Subject: _____**Biology Honors**_____

Standard #	Quarter	Standards/Objectives
19	2 & 4	Obtain, evaluate, and communicate information to explain the characteristics of plants and animals. a. Develop and use models to explain the major types of animal cells and tissues, and the major components and functions of physiological systems, including skeletal, muscle, circulatory, respiratory, digestive, urinary, endocrine, nervous, reproductive, and immune. b. Develop and use models to explain the basic mechanisms of plant reproduction and movement of materials in both vascular and nonvascular plants and describe the structures and functions of unique plant structures including the cell wall, chloroplasts, flower, and seed.
11	2 & 4	Analyze and interpret data collected from probability calculations to explain the variation of expressed traits within a population. a. Use mathematics and computation to predict phenotypic and genotypic ratios and percentages by constructing Punnett squares, including using both homozygous and heterozygous allele pairs. b. Develop and use models to demonstrate codominance, incomplete dominance, and Mendel's laws of segregation and independent assortment. c. Analyze and interpret data (e.g., pedigree charts, family and population studies) regarding Mendelian and complex genetic disorders (e.g., sickle-cell anemia, cystic fibrosis, type 2 diabetes) to determine patterns of genetic inheritance and disease risks from both genetic and environmental factors.
16	2 & 4	Analyze scientific evidence (e.g., DNA, fossil records, cladograms, biogeography) to support hypotheses of common ancestry and biological evolution. a. Describe the experiments of Redi, Needham, Spallanzani, and Pasteur to support or falsify the hypothesis of spontaneous generation. b. Explain how natural selection and its evolutionary consequences (e.g., adaptation or extinction) provide a scientific explanation for the fossil record of ancient life forms and the striking molecular similarities observed among the diverse species of living organisms. c. Distinguish between catastrophism, gradualism, and punctuated equilibrium.
14	2 & 4	Analyze and interpret data to evaluate adaptations resulting from natural and artificial selection that may cause changes in populations over time (e.g., antibiotic-resistant bacteria, beak types, peppered moths, pest-resistant crops). a. Explain the influences of other scientists (e.g., Malthus, Wallace, Lamarck, Lyell) and of Darwin's trip on HMS Beagle in formulating Darwin's ideas about natural selection. b. Contrast Lamarck's and Darwin's ideas about changes in organisms over time. c. Provide examples of behaviors that have evolved through natural selection (e.g., migration, courtship rituals). d. Design, perform, and analyze a laboratory simulation of natural selection on a working population.
15	2 & 4	Engage in argument from evidence (e.g., mathematical models such as distribution graphs) to explain how the diversity of organisms is affected by overpopulation of species, variation due to genetic mutations, and competition for limited resources.
13	2 & 4	Obtain, evaluate, and communicate information to explain how organisms are classified by physical characteristics, organized into levels of taxonomy, and identified by binomial nomenclature (e.g., taxonomic classification, dichotomous keys). a. Engage in argument to justify the grouping of viruses in a category separate from living things.
10	2 & 4	Construct an explanation and design a real-world solution to address changing conditions and ecological succession caused by density-dependent and/or density-independent factors. *

MOBILE COUNTY PUBLIC SCHOOLS
DIVISION OF CURRICULUM & INSTRUCTION
PACING GUIDE AT A GLANCE
2017- 2018
Subject: _____**Biology Honors**_____

Standard #	Quarter	Standards/Objectives
9	2 & 4	Use mathematical comparisons and visual representations to support or refute explanations of factors that affect population growth (e.g., exponential, linear, logistic).
7	2 & 4	Develop and use models to illustrate examples of ecological hierarchy levels, including biosphere, biome, ecosystem, community, population, and organism.
8	2 & 4	Develop and use models to describe the cycling of matter (e.g., carbon, nitrogen, water) and flow of energy (e.g., food chains, food webs, biomass pyramids, ten percent law) between abiotic and biotic factors in ecosystems.