Bayou Academy 2018-2019 Mrs. Alicia Braswell

Marine Biology Objectives (students will be able to):

- Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates.
- Describe the geologic development of the present day oceans and identify commonly found features, emphasizing the differences between creation and evolution theories in interpretation of the evidence for the formation of these features.
- Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms.
- 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.
- Describe the measurable properties of waves and explain the relationships among them and how these properties change when the wave moves from one medium to another.
- Review the structure and function of cells.
- Review the chemistry of life: carbohydrates, lipids, proteins, and nucleic acids.
- Recall other main cellular activities learned in Biology I, such as protein synthesis, mitosis, and transport across the cellular membrane.
- Demonstrate their knowledge of using a microscope properly by examining different tissue and organism samples and drawing/labeling what they see
- Practice safety rules in using laboratory equipment and supplies.
- Perform investigative dissections on a clam, sea star, squid, and juvenile dogfish shark, noting and identifying all the parts of the anatomy of each animal.
- Design and conduct a Science Fair experiment.
- Distinguish the characteristics of marine organisms in the first 4 kingdoms of creation (Monera, Protista, Fungi, and Plantae).
- Describe the characteristics of sponges, jellyfish, coral, and marine worms, describing the symmetry, body forms, behavior, feeding and reproductive methods.
- Distinguish between the different types of symbiosis among living things in the oceans.
- Distinguish the characteristics and examples of the main class of arthropods in the sea, as well as examples of three other arthropod classes.
- Identify the main body features, behaviors, and examples of the classes of Phylum Echinodermata.
- Compare and contrast the anatomy and behaviors of sharks with bony fishes.
- Identify the main body features, behaviors, and examples of the classes of Sub-Phylum Vertebrata.
- Compare and contrast the anatomy and behaviors of sea turtles, seabirds, Cetaceans and other marine mammals.
- Differentiate the various aspects of a food web, including trophic relationships, using correct terminology.

- Analyze primary productivity, including methods of measuring it in the oceans and the role of the carbon and nitrogen cycles in it.
- Characterize the different environmental zones of the oceans, including the typical organisms of each.
- Characterize the biotic and abiotic components that define freshwater systems and marine systems.
- Summarize the various uses of marine organisms and products derived from them.
- Analyze video presentations from the *Blue Planet* series.
- Apply knowledge of marine ecosystems to their daily lives.
- Evaluate career opportunities in the field of marine biology.
- Evaluate the findings of current research in the field of marine biology.
- Design, research, and perform a presentation to the class on a marine organism with which humans interact, including a sample of food made with the organism (or something the organism eats).

<u>For the ADVANCED class:</u>

- Review of past science classes and lab techniques will be more extensive.
- Evaluation of the findings of current research in the field of marine biology will be more extensive and frequent.
- Research of marine life for the purpose of applying the findings to improving human health or the human condition will be emphasized.
- If possible, an overnight field trip to the Mississippi Gulf Coast will be conducted.