Gulfport School District
PACING GUIDE

MARINE & AQUATIC SCIENCE

Content Strands: Inquiry (I), Life Sciences (L), Earth and Space (E)		
QTR	**Competency/Objective**	
	Apply inquiry-based and problem-solving processes and skills to scientific investigations. (I)	
1.1	1a	Conduct a scientific investigation demonstrating safe procedures and proper care of laboratory equipment. (DOK 2) • Safety rules and symbols • Proper use and care of the compound light microscope, slides, chemicals, etc. • Accuracy and precision in using graduated cylinders, balances, beakers, thermometers, and rulers
2.1	1b	Formulate questions that can be answered through research and experimental design. (DOK 3)
1.1	1c	Apply the components of scientific processes and methods in classroom and laboratory investigations (e.g., hypotheses, experimental design, observations, data analyses, interpretations, theory development). (DOK 3)
1.2	1d	Construct and analyze graphs (e.g., plotting points, labeling x-and y-axis, creating appropriate titles and legends for circle, bar, and line graphs). (DOK 2)
1.1	1e	Analyze procedures, data, and conclusions to determine the scientific validity of research. (DOK 3)
1.1	1f	Recognize and analyze alternative explanations for experimental results and to make predictions based on observations and prior knowledge. (DOK 3)
2.1	1g	Communicate and defend a scientific argument in oral, written, and graphic form. (DOK 3)
	Develop an understanding of physical and chemical properties of water and aquatic environments. (E)	
1.1	2a	Analyze the physical and chemical properties of water and justify why it is essential to living organisms. (DOK 1)
1.1	2b	Explain the causes and characteristics of tides. (DOK 1)
1.1	2c	Research, create diagrams, and summarize principles related to waves and current characteristics and formation. (DOK 2)
1.1	2d	Compare and contrast the physical and chemical parameters of dissolved O_2, pH, temperature, salinity, and results obtained through analysis of different water column depths/zones. (DOK 2)
1.2	2e	Investigate the causes and effects of erosion and discuss conclusions. (DOK 2)
1.2	2f	Describe and differentiate among the major geologic features of specific aquatic environments. (DOK 1) • Plate tectonics • Rise, slope, elevation, and depth • Formation of dunes, reefs, barrier/volcanic islands, and coastal/flood plains • Watershed formation as it relates to bodies of fresh water

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Content Strands: Inquiry (I), Physical Sciences (P)		
QTR	**Competency/Objective**	
	Develop an understanding of physical and chemical properties of water and aquatic environments. (E)	
1.2	2g	Compare and contrast the unique abiotic and biotic characteristics of selected aquatic ecosystems. (DOK 2) • Barrier island, coral reef, tidal pool, and ocean • River, stream, lake, pond, and swamp • Bay, sound, estuary, and marsh
	Apply an understanding of the diverse organisms found in aquatic environments. (L)	
2.2	3a	Analyze and explain the diversity and interactions among aquatic life. (DOK 3) • Adaptations of representative organisms for their aquatic environments • Relationship of organisms in food chains/webs within aquatic environments.
2.1	3b	Research, calculate, and interpret population data. (DOK 2)
1.2	3c	Research and compare reproductive processes in aquatic organisms. (DOK 2)
1.1	3d	Differentiate among characteristics of planktonic, nektonic, and benthic organisms. (DOK 1)
2.2	3e	Explore the taxonomy of aquatic organisms and use dichotomous keys to differentiate among the organisms. (DOK 2)
1.1	3f	Research and explain the symbiotic relationships in aquatic ecosystems. (DOK 3)
	Draw conclusions about the relationships between human activity and aquatic organisms. (L)	
1.2	4a	Describe the impact of natural and human activity on aquatic ecosystems and evaluate the effectiveness of various solutions to environmental problems. (DOK 3) • Sources of pollution in aquatic environments and methods to reduce the effects of the pollution • Effectiveness of a variety of methods of environmental management and stewardship • Effects of urbanization on aquatic ecosystems and the effects of continued expansion
1.2	4b	Research and cite evidence of the effects of natural phenomena such as hurricanes, floods, or drought on aquatic habitats and organisms. (DOK 3)
2.1	4c	Discuss the advantages and disadvantages involved in applications of modern technology in aquatic science. (DOK 2) • Careers related to aquatic science • Modern technology within aquatic science (e.g., mariculture, aquaculture) • Contributions of aquatic technology to industry and government