GBCS Curriculum Guide			GRADE:		SUBJECT:			
Topic	**Pacing**	**Unit**	**Standards**	**Enduring Understandings & Essential Questions**	**Learning Targets**	**Vocabulary/Concepts**	**Materials**	**Assessments**
Intro to Marine science	2 weeks		HS-ESS1: Earth's place in the universe. HS-ESS3: Earth and human activity.	1. exploring the ocean 2. science as inquiry 3. marine science and technology	Chapter 1 - Distinguish between marine biology and oceanography. Chapter 2 - List the steps in scientific method. Chapter 3 - Identify the ocean features that are monitored by the satellites.	Buoyancy, Circumnavigate, Sonar, Aqua-Lung, Submersibles, Variable, Hypothesis, scientific Method, Experimental Group, Specific Gravity, ROV, Regulator, Satellite.		
Basic life forms in the sea	2 weeks		HS-LS4: Biological evolution- OLP 4,5,6. HS-ESS3:Earth and human activity.	1. Unicellular marine organisms 2. Marine algea and plants 3. simple marine worms	Chapter 4 - Describe organisms from each kingdom. - List the main characteristics of the organisms. Chapter 5 - Distinguish between the different types of algae. Chapter 6 -Describe how each nutrient is utilized in animals.	Bioluminscence, Dinoflagellates, Bacteria, Red Tide, Chemosynthesis, Cordgrass, Multicellular, Holdfast, Kelp, Prop roots, Spicules, Larva, Filter Feeders.		
Marine invertebrates	2 weeks		HS-LS4: Biological evolution- OLP 4,5,6. HS-ESS3:Earth and human activity.	1. cnidarians 2. marine worms 3. mollusks 4. crustaceans 5. echinoderms	Chapter 7 - Describe the structure of the jellyfish. - Explain how the jellyfish carries out its life functions. Chapter 8 - Discuss similarities and differences among the worms. Chapter 9 - Identify the structures of a clam. - Discuss the life functions of a clam. Chapter 10 - Explain how arthropods are adapted to the environment. -Discuss body structures and functions in the lobster.	Medusa, Cnidoblasts, Polyp, Zooxanthellae, Hydroid, Ganglia, Parapodia, annelids, probosics, Hirudin, Mantle, Incurrent Siphon, Radula, Byssal Threads, Excurrent Siphon, Exoskeleton, Cephalothorax, Swimmerets, Molting, Copepod.		
The water planet	2 weeks		HS-LS4: Biological evolution- OLP 4,5,6. HS-ESS3:Earth and human activity.	1. The world of water 2. Geology of the ocean 3. Climate and the ocean	Chapter 12 - Classify the marine fishes. - Compare and contrast the different types of fish. - Identify the fishes' distinguishing characteristics. - Identify a fish's external structures that carry out life functions. -Identify adaptations in different types of marine fish. - Explain how the fishes' adaptations aid their survival. Chapter 13 - Describe adaptations in marine reptiles. Chapter 14 - Identify the marine mammals. - Classify the marine mammals. - Compare and contrast marine mammals. - Identify adaptations in whales to the marine environment. - Explain how the adaptations enhance the whale's survival. - Describe how whale structures are related to their functions.	pH, Precipitation, Evaporation, Condensation, Water Budget, Plate Tectonics, Hot Spot, Subduction, Magma, Hydrothermal Vent, Humidity, Greenhouse Effect, Specific Heat, Dew Point, Hurricane.		

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Energy in the ocean	3 weeks		HS-ESS2: Earth's systems. HS-ESS3: Earth and human acitivty. HS-ESS1: Earth's place in the universe- OLP 1,2 HS-LS1: From molecules to organisms. HS: Waves. HS-ESS1: Earth's place in the universe. HS-PS2: Motion and stability- OLP 1 HS-PS3: Energy- OLP 3	1. Temperature and pressure 2. Light and sound in the sea 3. Tides, waves, and currents	Chapter 15 - Define latitude and longitude. - Locate geographical regions using latitude and longitude. - Define the term acid rain. - Describe the pH of ocean water. Chapter 16 - Explain where the oceans came from. - Describe the theory of continental drift. - Describe the process of plate tectonics. - Explain why the Atlantic Ocean widens each year. - Cite examples of seismic activity. - Describe the process of subduction. - Define sonar. - Describe the topographical features. - Describe how a coral reef evolves. Chapter 17 - Define convection currents (in water and in air). -Explain how convection currents cause winds. - Discuss the dynamics of a hurricane. - Explain why hurricanes are less destructive today. - Describe El Nino (and La Nina) currents. - Describe the greenhouse effect.	Photophores, electromagnetic Spectrum, Amplitude, Frequency, Refraction, Tidal Range, Wave Train, Tsunami, Upwelling, Rip Current.		
Marine ecology and conservation	4 weeks		HS-LS4: Biological evolution. HS-PS4: Waves and their applications in technologies for information transfer. HS-PS2: Motion and stability. HS-PS3: Energy.	1. Marine environments 2. Interdependence in the Sea 3. Pollution in the ocean 4. Conservation of resources	Chapter 19 - Define bioluminescence. -Define how bioluminescence occurs. - Discuss the role of light and color in fish. - Explain how whales and dolphins echolocate. - Discuss the use of sonar by people. Chapter 20 - Define high tide and low tide. -Discuss the role of the moon and the sun in tidal change. - Describe an ocean wave. - Explain how a wave is produced. - Calculate the speed of a wave. - Discuss the different causes of waves. - Identify global ocean currents. - Describe the location and direction of ocean currents. - Explain how ocean currents move.	Mangrove Community, Benthic Zone, Neritic Zone, Intertidal Zone, Estuary, Mutualism, Food Pyramid, Pioneer Community, Primary Consumer, Abiotic, Nonbiodegradable, Sludge, Turbidity, Effluent, Hypoxia, Mariculture, Desalination,		Marking period final

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Marine vertebrates	5 weeks		HS-ETS1: Engineering design. HS-LS2: Ecosystems- Interactions, energy, and dynamics. HS-ESS3: Earth and human activity.	1. Marine Fishes 2. Marine reptiles and Birds 3. Marine mammals	Chapter 21 -Identify the major marine life zones. -Describe the features of an estuary. Explain why the estuaries are important. Identify the communities in an estuary. Explain why the coral reef is an important marine environment. Identify the typical inhabitants of a coral reef. Describe the interrelationship among the reef inhabitants. Chapter 22 -Define food chain. -Describe good relationships in a food chain. Construct a marine food chain. Define symbiosis. Compare mutualism, commensalism, and parasitism. Chapter 23 -Define water pollution. -Explain why sewage treatment is necessary. Define toxic chemicals. Cite examples of toxic waste. Describe the health effects of toxic chemicals. Chapter 24 -Describe how fish are caught commercially. -Discuss measures to conserve fish resources. Define maximun sustainable yield. Define aquaculture and mariculture. Cite examples of extinct and endangered marine species. Distinguish between threatened and endangered species. Explain how the manatee became an endangered species. -Cite specifiic conservation laws that protect marine species. Describe conservation measures to protect endangered species. -Discuss the importance of habitat protection in conservation.	Cartilage, Operculum, Spiracles, Lateral Line Organ, Swim Bladder, Endothermic, Sea Snake, Marine Iguana, Preen, Sea Turtle, Pinnipeds, Baleen Whales, Breaching, Bulbber, Pod.		Marking period final