

SCIENCE

An Introduction to Marine Biology

- I. THE OCEAN PLANET 40%
 - A. An Introduction to Marine Biology
 - 1. What Is Marine Biology?
 - 2. The History of Marine Biology and Oceanography
 - 3. Modern Marine Biology and Oceanography
 - B. How Do We Study Marine Life?
 - 1. The Scientific Method
 - C. The Geography and Geology of the Ocean
 - 1. Ocean Basin Geography
 - 2. The Formation of the Earth and the Ocean
 - 3. The Ocean Floor and Plate Tectonics
 - 4. The Formation of the Basins
 - 5. Marine Provinces
 - a. Continental Margins
 - b. The Deep-Sea Floor
 - 6. Biological Provinces
 - D. Water and Seawater
 - 1. The Chemical and Physical Properties of Water
 - 2. Seawater
 - 3. Dissolved Gases in Seawater
 - E. Sediments
 - 1. The Classification of Sediments
 - 2. The Study and Economic Impact of Sediments
 - F. Interactions of the Ocean and the Atmosphere
 - 1. Atmospheric Circulation
 - 2. Oceanic Circulation
 - G. Waves
 - 1. Wave Anatomy
 - 2. Wave Classification
 - 3. Wave Generation
 - 4. Tsunamis
 - H. Tides
 - 1. Lunar Tides
 - 2. Solar Tides
 - 3. Tidal Patterns
 - 4. Tidal Patterns and Marine Organisms
 - 5. Energy from Tides
- II. MARINE LIFE 40%
 - A. The Origins of Life
 - B. Defining Marine Life

- C. The Building Blocks of Life
- D. Photosynthesis and Chemosynthesis
 - 1. The Fuel of Life
- E. Biogeochemical Cycles
 - 1. The Carbon Cycle
 - 2. The Nitrogen Cycle
 - 3. The Phosphorous Cycle
- F. Classifying Marine Life
 - 1. The Tree of Life
- G. The Microbial World
 - 1. Viruses
 - 2. Bacteria
 - 3. Archaea
 - 4. Unicellular Algae
 - 5. Protozoans
- H. Plankton
 - 1. Phytoplankton
 - 2. Zooplankton
- I. Seaweeds and Plants
 - 1. Seaweeds
 - 2. Flowering Plants
 - 3. Salt Marsh Plants
 - 4. Mangroves
- J. Invertebrates: Animals without a Backbone
 - 1. Sponges
 - 2. Gelatinous Animals
 - 3. Worms
 - 4. Molluscs
 - 5. Arthropods
 - 6. Echinoderms
 - 7. Tunicates and Cephalochordates
- K. Vertebrates
 - 1. Jawless Fishes
 - 2. Cartilaginous Fishes
 - 3. Bony Fishes
 - 4. Marine Reptiles
 - 5. Marine Birds
 - 6. Marine Mammals

III. MARINE ECOSYSTEMS 10%

- A. What Is Marine Ecology?
- B. Environmental Factors Limiting Organismal Distribution
- C. Ecological Principles
- D. Habitats
 - 1. The Intertidal Zone
 - 2. Seaweed Communities

3. Estuaries and Salt Marshes
 4. Coral Reefs
 5. The Open Ocean
 6. The Deep-Sea
- E. Feeding and Food Webs

IV. HUMANS AND THE OCEAN 10%

- A. Resources from the Ocean
1. Living Resources
 2. Nonliving Resources
- B. Anthropogenic Impacts
1. Marine Pollution
 2. Eutrophication
 3. Habitat Modification
 4. Overfishing
 5. Introduced Species
 6. Climate Change Impacts on the Oceans
- C. Conservation and Protection
1. Marine Protected Areas
 2. Habitat Restoration