

Biological Oceanography

- **Phytoplankton:** Phytoplankton are microscopic, photosynthetic organisms that drift in ocean water, forming the base of the marine food chain.
- **Zooplankton:** Zooplankton are small, often microscopic, animal organisms that drift in the ocean, serving as a vital food source for marine life.
- **Marine Biology:** Marine biology is the scientific study of organisms that live in the ocean, including their behavior, physiology, and ecological interactions.
- **Ocean Currents:** Ocean currents are continuous, directed movements of ocean water caused by a combination of wind, temperature, salinity, and Earth's rotation.
- **Biogeochemical Cycles:** Biogeochemical cycles are the pathways through which nutrients are exchanged between living organisms, the atmosphere, and the environment.
- **Primary Production:** Primary production refers to the process by which organisms, such as phytoplankton, convert sunlight into organic compounds through photosynthesis.
- **Marine Ecosystems:** Marine ecosystems refer to the interconnected web of organisms and their physical environment in the ocean, including coral reefs and kelp forests.
- **Plankton:** Plankton are microscopic organisms that drift or swim in the ocean, including phytoplankton (plants) and zooplankton (animals).

Chemical Oceanography

- **Nutrients:** Nutrients are essential chemicals, such as nitrogen and phosphorus, that marine organisms need for growth and metabolism in ocean ecosystems.
- **Carbon Cycle:** The carbon cycle in chemical oceanography involves the exchange of carbon dioxide between the atmosphere, ocean, and marine organisms.
- **Trace Metals:** Trace metals in Chemical Oceanography refer to metals present in seawater at very low concentrations, typically below 1 $\mu\text{g/L}$.
- **pH:** pH in Chemical Oceanography refers to the measurement of acidity or alkalinity of seawater on a scale of 0-14.
- **Dissolved Oxygen:** Dissolved oxygen refers to the amount of oxygen gas dissolved in seawater, essential for the survival of marine organisms.
- **Phytoplankton:** Phytoplankton are microscopic marine organisms that obtain energy through photosynthesis, playing a crucial role in marine food webs.
- **Salinity:** Salinity refers to the concentration of dissolved salts in seawater, typically measured in parts per thousand (ppt) or practical salinity units (psu).

Physical Oceanography

- **Coriolis Effect:** The Coriolis effect is the deflection of moving objects, such as ocean currents, due to the Earth's rotation.
- **Density:** Density in physical oceanography refers to the mass of seawater per unit volume, affected by temperature, salinity, and pressure.
- **Salinity:** Salinity refers to the concentration of dissolved salts in seawater, measured in parts per thousand, influencing the water's density.
- **Ocean Currents:** Ocean currents are continuous movements of seawater driven by various factors such as winds, temperature, and salinity gradients.
- **Upwelling:** Upwelling is the phenomenon in which cold, nutrient-rich water from the deep ocean rises to the surface, supporting marine life.
- **Ekman Transport:** Ekman transport refers to the net movement of surface water in the ocean caused by wind stress acting on the water.
- **Thermohaline Circulation:** Thermohaline circulation refers to the large-scale movement of ocean water driven by differences in temperature and salinity.
- **Sea Surface Temperature:** Sea surface temperature refers to the temperature of the top layer of the ocean, typically measured using satellites or buoys.

Geological Oceanography

- **Seafloor:** The seafloor refers to the bottom of the ocean, which includes various geological features such as ridges, trenches, and abyssal plains.
- **Plate Tectonics:** Plate tectonics is the scientific theory that Earth's lithosphere is divided into rigid plates that move and interact with each other.
- **Submarine Volcanoes:** Submarine volcanoes are underwater vents or fissures in the Earth's crust where molten rock and gases are discharged.
- **Sedimentation:** Sedimentation is the process of particles settling to the bottom of a body of water, often forming layers over time.
- **Seamounts:** Seamounts are underwater mountains that rise from the ocean floor but do not reach the water's surface.
- **Mid-ocean Ridges:** Mid-ocean ridges are underwater mountain ranges where tectonic plates are moving apart, allowing magma to rise and create new oceanic crust.
- **Continental Shelf:** The continental shelf is the shallow, submerged extension of a continent, typically extending from the shoreline to the continental slope.

- **Oceanic Crust:** Oceanic crust is the outermost layer of Earth's oceanic lithosphere, composed mainly of basaltic rock formed at mid-ocean ridges.

Marine Ecology

- **Ecosystem:** An ecosystem in marine ecology refers to a community of organisms interacting with each other and their physical environment.
- **Ocean Acidification:** Ocean acidification is the ongoing decrease in the pH levels of the Earth's oceans caused by the absorption of carbon dioxide from the atmosphere.
- **Marine Conservation:** Marine conservation refers to the protection and preservation of marine ecosystems, species, and habitats to ensure their long-term sustainability.
- **Plankton:** Plankton are small organisms that drift or swim in the ocean, serving as a crucial food source for many marine animals.
- **Coral Reef:** A coral reef is a diverse underwater ecosystem formed by the accumulation of coral skeletons and inhabited by various marine species.
- **Biodiversity:** Biodiversity in marine ecology refers to the variety of species and ecosystems present in the ocean environment.

Marine Conservation

- **Marine Protected Areas:** Marine protected areas are designated oceanic zones where human activities are restricted to conserve marine ecosystems and biodiversity.
- **Coral Reefs:** Coral reefs are diverse underwater ecosystems formed by colonies of tiny animals called corals, providing habitat for numerous marine species.
- **Overfishing:** Overfishing is the practice of catching fish at a rate faster than they can reproduce, leading to depletion of fish stocks.
- **Marine Pollution:** Marine pollution refers to the introduction of harmful substances into the ocean, damaging marine ecosystems and endangering marine life.
- **Sustainable Fishing:** Sustainable fishing refers to fishing practices that ensure the long-term health and viability of fish populations and marine ecosystems.
- **Marine Biodiversity:** Marine biodiversity refers to the variety of life forms within marine ecosystems, including species, genetic diversity, and habitats.
- **Marine Ecosystems:** Marine ecosystems refer to the interconnected marine organisms and their physical environment, including coral reefs, seagrass beds, and open ocean habitats.
- **Marine Conservation Efforts:** Marine conservation efforts refer to actions taken to protect and preserve marine ecosystems and species from human impact and degradation.

