

SYLLABUS
OCEANOGRAPHY
(PG Degree Standard)

Subject Code:360

UNIT- I: GENERAL INTRODUCTION TO OCEANOGRAPHY

Major expeditions, Ocean Floor Topography and Terminology – Continental Shelf, Continental Slope, Continental Margin, Continental Rise, Submarine Canyons, Mid Ocean Ridges, Trenches, Abyssal Plains.

UNIT- II: OCEAN WAVES AND TIDES

Definition and terms, Wave theories, Classification; progressive waves, shallow water waves, Seismic Sea waves (Tsunami), wind waves, stationary waves, sea and swell, deep and shallow water waves, storm surges, Beaufort scale, spilling and breaking waves, Tides and tide generating forces, type of tides, tidal currents, rip currents.

UNIT - III: PHYSICAL PROPERTIES OF SEA WATER

Salinity and chlorinity; temperature; thermal properties of sea water; density and stability, conductivity, viscosity, heat budget, colligative and other properties of sea water, residence time of constituents in sea water, properties of sea ice, transmission of sound, absorption of radiation.

UNIT - IV: OCEAN CURRENTS

Definitions, direct and indirect forces acting on sea waters, surface currents, Coriolis effect, Ekman spirals, geostrophic currents, upwelling, sinking, circulation, El-Nino, La-Nina, significance of major ocean currents of the world measurement of currents.

UNIT - V: CIRCULATION OF WATER MASSES

Formation and classification of water masses, General distribution of temperature, salinity and density, Identification of water masses, Salinity and temperature of surface layer (SST), SSS,T-S diagram, water masses of Indian Oceans, Estuaries and estuarine circulation, Thermo haline circulation.

UNIT- VI: CHEMICAL PROPERTIES OF SEA WATER

Constancy of its composition and factors affecting the composition, major and minor constituents, trace elements - artificial sea water - dissolved gases in sea water, CO₂ system, dissolved Oxygen and Oxygen profile, Nutrients in the Ocean, their cycles and factors influencing their distribution: Nitrogen, phosphorus, silicate, manganese.

UNIT- VII: BIOLOGICAL OCEANOGRAPHY

Marine biotic diversity: Primary and secondary productivity of the coastal environment: Plankton, Nekton, benthos, phytoplankton, Zooplankton, Primary production, and factors affecting primary production, sea weed, seagrass, mangrove and coral reef ecosystem.

UNIT - VIII : OCEAN SEDIMENTS

Classification of sediments - Lithogenic sediment, biogenic sediments, hydrogenic sediment, Manganese nodules.

UNIT - IX :OCEANOGRAPHIC FACTORS IN FISHERIES

Effects of physico chemical and biological oceanographic factors on adaptation, behavior, abundance and production of aquatic organisms; speed and magnitude of short term changes in the ocean.

UNIT - X :FORECASTING SYSTEMS

Fisheries forecasts – Interpretation and use of ocean thermal structure in fisheries; Fisheries forecasting system in India and other countries-remote sensing; Global positioning system (GPS) application of remote sensing in fisheries; Application of echo-sounder and SONAR.
