

Faculty of Ocean Science and Technology

Subject Code: B1804

Marine Biology

Module. 1	<p>Research Methodology and Bio-statistics: Types and significance of research; research approaches–objectives of research- important concepts relating to research design. Research ethics–plagiarism. Patents - Intellectual property Rights (IPR)- Patent laws - Copy right. Citation index - impact factor, H index. Databases - Inflibnet, Shodh Ganga, ShodhSindhu, - Biological databases. Reference management and publishing softwaresMendeley, Endnote, Latex. Chromatographic techniques – Ion-exchange chromatography – affinity chromatography – HPLC – Electrophoretic techniques - PAGE and SDS PAGE – Blotting techniques – Western Blotting and Southern Blotting – Centrifugation techniques - PCR techniques – microscopic techniques – Immuno- fluorecence, SEM and TEM. Sampling methods for biological studies. Measures of central tendency – Mean, median, mode. Measures of dispersion – range, mean deviation, standard deviation, skewness, kurtosis.</p>
Module. 2	<p>Taxonomy and Phylogeny: Principles of taxonomy and techniques of taxonomy. Systematic and general description of marine faunal groups. General features of the following Kingdom: Monera, Protista, Chromista, Fungi and Metazoa. Description of various phyla of marine organisms with examples.</p>
Module .3	<p>Marine Biology: early scientific investigations History of marine biological investigations in India. Equipments used for sampling water, sediment, plankton and benthos. Salient features of world oceans. Physico-chemical features of marine environment – tides, currents, waves, upwelling and monsoon cycles. Mudbanks.Plankton, Nekton and benthos.Primary and secondary productivity - estimation methods.</p>
Module. 4	<p>Marine Ecology: Zonation in marine environments. Marine Habitats – Types and divisions of marine habitats – Basic concepts about estuaries, coastal, oceanic and deep-sea ecosystems.Marine biodiversity hotspots and MPAs in India.Conservation status of marine organisms.Red list and its categories.Biotic factors in relation to individuals.Species interactions – Competition, predation and grazing.Population characteristics – natality, mortality, emigration and immigration.</p>
Module. 5	<p>Fish & Fisheries: Marine Fisheries of India - Fishery resources of India– Present status and trends - Important species contributing to the fishery - Exploitation, seasonal trends, production and demands. Deep Sea Fishery Resources – Major species – present status of exploitation – Explorative surveys in Indian EEZ. Deep Sea fishing policy - Oceanographic factors affecting deep sea fishery.</p>
Module .6	<p>Mariculture: Various methods of mariculture, culture of seaweeds, mussels, pearl oyster and finfish.</p>
Module. 7	<p>Climate Change and Fisheries: Marine ecosystems and global change – climate forcing on marine ecosystem, human impact on marine ecosystem, socioecological aspects of global change on marine ecosystem and marine resource management in the changing scenario.</p>