

	<p>11. Standard Methods for the Examination of Water and Wastewater (2011, 22 nd Edition). Ed. Laura Bridgewater, American Public Health Association, American Water Works Association, Water Environment Federation.</p> <p>12. Handbook of water analysis (2011, 3rd Edition). Ed. Leo M.L. Nollet, Leen S. P. De Gelder. CRC Press. Taylor and Francis Group, LLC.</p> <p>13. Water Quality Concepts, Sampling, and Analyses (2010). Ed. Yuncong Li, Kati Migliaccio. CRC Press. Taylor and Francis Group, LLC.</p> <p>14. Essentials of Practical Microbiology (2018). Ed. Apurba Sankar Sastry, Bhat Sandhya K. Jaypee brothers medical publishers (P) Ltd.</p> <p>15. Practical Microbiology (2009). Ed R. Vasanthakumari. BI Publications Pvt Ltd.</p>	
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**Course Code: MBC 189**

**Number of Credits: 3**

## Content

## MODULE I

- Preparation of solid & liquid media, Differential and Selective media: Isolation of bacteria from seawater /sediments samples, Enumeration: serial dilution methods, plating.
- Maintenance of organisms: Streaking, slants and stabs cultures
- Study of morphology and cultural characteristics.
- Gram staining.
- Motility
- Antimicrobial sensitivity test and demo of drug resistance.
- Cultivation of fungi: Slide, chunk and coverslip techniques.

36 hours

## MODULE II

- Samplers: water samplers, dredges , grabs, snappers.
  - Sampling (Field trips) and identification:
  - Phytoplankton & Zooplankton
  - Nekton
  - Benthos
- Estimations:
- Chlorophyll
  - Nutrients: nitrates/nitrites, phosphates/silicates
  - Dissolved oxygen
  - Salinity, pH & alkalinity

36 hours

## References / Reading

1. Brock's Biology of microorganisms. (2006). Madigan, M., Martinko & Parker, J.
2. General Microbiology. (1987). Stanier, R.Y., Ingraham, Wheelis and Painter
3. Marie and Estuarine Microbiology Laboratory Manual. (1975). Colwell, R. et al.
4. Microbiology Methods. (1975). Collins, C.H. and Lyne, P.M.
5. Laboratory Methods in Microbiology. (1973). Harrigan, W.F. & McCance, M.E.
6. Source book of Experiment for the teaching of Microbiology. (1982). Primrose, .B. and Wardlaw, A.C.
7. Methods of Sea Water Analysis. (1995). Grasshoff, K., Ehrhardt, M. & Kremling, K.
8. Quantitative Ecology Ecology & Marine Biology. (1990). Bakus, G.J.
9. Methods of study of Marine Benthos. (1984). Holme, N.A. & McIntyre, A.D.
10. Methods in Marine Zooplankton Ecology. (1984). Omori, W. & Ikeda, T.