**MMC 204-P MARINE MICROBIOLOGY (P)**
**Practical Course Credit : 1**
**Contact Hours : 30**

1. Sampling methods for collection of water and sediment samples from coastal environments.
2. Analysis of physico-chemical parameters of seawater.
3. Isolation and enumeration of microbes from coastal environments.
4. Assessment of salt requirement of marine isolates from different ecosystems.
5. Nitrification and denitrification by marine bacterial isolates.
6. Study of biofilm formation by microorganisms.

**Reference Books (Composite list for theory and practicals):**


1. Belkin, S. and Colwell, R. R., Ocean & Health: Pathogens in the Marine Environment, Springer.
2. Grasshoff, K., Ehrhardt, M. and Kremling, K., Methods of Seawater Analysis, Verlag Chem., Weinheim.
3. Hunter-Cevera, J., Karl, D. and Buckley, M., Marine Microbial Diversity: the Key to Earth's Habitability, American Academy of Microbiology.
4. Meller, C. B., Wheeler, P. A., Biological Oceanography, Wiley-Blackwell Publishers.
5. Mitchell, R. and Kirchman, D. L., Microbial Ecology of the Oceans, Wiley-Blackwell Publishers.
6. Munn, C., Marine Microbiology: Ecology and Applications, Garland Science, Taylor and Francis, N.Y.
7. Nybakken, J. W. and Bertness, M. D., Marine Biology: an Ecological Approach, Benjamin Cummings, San Francisco.
8. Parsons, T. R., Maita, Y. and Lalli, C. M., Manual of Chemical and Biological Methods for Seawater Analysis, Pergamon Press, New York.
9. Strickland, J. D. H. and Parsons, T. R., A Manual of Seawater Analysis, Queen's Printer and Controller of Stationery, Ottawa.
10. Sournia, A., UNESCO Monographs on Oceanographic Methodology, Vol. 6, Phytoplankton Manual, UNESCO Publishing, Paris.
11. Tomas, C. R., Identifying Marine Phytoplankton, Academic Press, San Diego, CA.