Programme: M.Sc. (Marine Microbiology)
Course Code: MMO 318
Title of the Course: MICROBIAL OCEANOGRAPHIC METHODS - Practical
Number of Credits: 1
Effective from Academic Year: 2020-21

Prerequisites	Basic understanding of the marine environments.	
Objective	Enable the students to identify microbes and understand their role in the marine environment.	
Content		**24 H**
1.	Use of fluorochromes for enumeration of bacteria from the marine environment using epifluorescence microscopy.	
2.	Enumeration of live and dead marine microbes using microscopy	
3.	Microscopic observation of cellular components using fluorochromes	
4.	Estimation of primary productivity using light and dark method.	
5.	Determination of dissolved organic carbon from seawater.	
6.	Determination of hydrolytic enzymes from plankton/seawater/sediments	
Pedagogy:	Laboratory experiments/ Field trips	
References/ Readings	Colin Munn (2011). Marine Microbiology Ecology & Applications. Taylor Francis Group.	
	A Manual of Chemical and Biological Methods for Seawater Analysis, 1984 – Parsons, T. R., Maita, Y. and Lalli, C. M.; Pergamon Press, Oxford.	
	A practical handbook of seawater analysis, 1972 - Strickland, J.D.H, and Parsons, T.R., Fisheries Board of Canada bulletin. (2nd edition).	
	Jeffrey, S.W and Vesk, M., Introduction to Marine Phytoplankton and Their Pigment Signatures. In: Phytoplankton Pigments in Oceanography. UNESCO Publishing, Paris.	
Learning Outcomes	Knowledge on how to study microbes in the ocean using different sampling strategies, techniques and instrumentation.	