Name of the Programme: M. Sc.Marine Sciences
Course Code: MSC 501
Title of the Course: Physical Oceanography Practical
Number of Credits: 01
Effective from AY: 2022-23

Prerequisites for the course:	Degree of Bachelor of Science of this University or an examination of any other university recognized as equivalent.	
Objective:	To develop an ability to analyse physical oceanographic properties and decipher associated processes	
Content:	Analysis of vertical profiles of temperature, salinity and density to understand the physical processes at low, mid and high latitudes of the world ocean (6 hours; References 1 and 2) Distinguish variation in properties of upwelling and non-upwelling periods/ regions using a) temperature, b) salinity and c) density (3 hours; References 1 and 2) Vertical section of temperature to study the physical processes along a transect (6 hours; References 1, 2 and 3) Vertical section of salinity to study the physical processes along a transect (6 hours; References 1, 2 and 3) Vertical section of density to study the physical processes along a transect (6 hours; References 1, 2 and 3) Estimation and analysis of heat content in different parts of World Ocean (3 hours; References 4 and 5)	30 hrs.
Pedagogy:	Tutorials/ assignments/ practical/ field study	

References/Readings:	1.Wright, J., & Colling, A. (1995). *Seawater: its composition, properties, and behavior (Second Edition)*. Pergamon Press, in association with the Open University. 2.Stewart, R. H. (2008). *Introduction to physical oceanography*. Robert H. Stewart. https://open.umn.edu/opentextbooks/textbooks/20 3.Colling, A. (2001). *Ocean circulation* (Second Edition) (Vol. 3). Butterworth-Heinemann in association with The Open University. 4.Tomczak, M., & Godfrey, J. S. (2001). Regional Oceanography: an Introduction. Online edition. https://www.geo.uni-bremen.de/~apau/dynamicclimate/course_materials_2015/Resources/tomczak_godfrey_1994.pdf 5.Fofonoff, N. P., & Millard Jr., R. C. (1983). Algorithms for the computation of fundamental properties of seawater. UNESCO Technical Papers in Marine Science 44, Endorsed by UNESCO/SCOR/ICES/IAPSO/ Joint Panel on Oceanographic Tables and Standards and SCOR Working Group 51; Place de Fontenoy, Paris, France: UNESCO. d.o.i.: https://doi.org/10.25607/OBP-1450	
Course Outcome:	1. An ability to explain processes based on variations of the conservative properties of ocean and describe spatial and temporal variation of ocean processes.	