Programme: M. Sc. (Marine Sciences)
Course Code: MSO 271 **Title of the Course: Physical Oceanography Practical II**
Number of Credits: 01
Effective from AY: June, 2018-19

Prerequisites for the course:	Degree of Bachelor of Science of this University or an examination of any other University recognized as equivalent.
Objective:	Delineate and identify regions of a) watermasses, b) Most efficient sound channel in sea c) estimate ocean currents and measure atmospheric parameters.

Content:	1. Identification of water masses and determination of stability of water column using T-S diagram (6hrs; 1-4) 2. Estimation of sound speed and determination of SOFAR channel in different parts of the world ocean (6hrs; Ref 1, 4) 3. Analysis of physical oceanographic processes from Horizontal sections using in-situ data (3hrs) (Ref 2) 4. Computation and Analysis of dynamic topography (6hrs; Ref 2, 5) 5. Measurements of atmospheric pressure, humidity, minimum and maximum temperature, computation of absolute humidity, specific humidity – Mixing ratio (3hrs; Ref 7) 6. Field observations of physical oceanographic parameters-use of meteorological instruments (6hrs; Ref 7, 8)	24 hours
Pedagogy:	Tutorials/assignments/practical/field study	
References/ Readings	1. Seawater: Its Composition, Properties and Behaviour, 1995 - Second Edition, Open University Press, 2. Ocean Circulation, 2001 - Second Edition, Open University Press, Walton Hall, Milton Keynes, MK76AA, UK 3. Algorithms for computation of fundamental properties of seawater, 1983. UNESCO TECHNICAL PAPERS IN MARINE SCIENCE, Endorsed by UNESCO/SCOR/ICES/IAPSO/ Joint Panel on Oceanographic Tables and Standards and SCOR Working Group 51, Unesco, Place de Fontenoy, 75700, Paris, France 4. Principles of physical oceanography, 1996 – Pierson, W.J. and Newmann, G.S., Prentice Hall Inc., New Jersey, U.S.A.. 5. Introduction to Dynamic Oceanography, 1983 - Pond, S. and Pickard, G.H., Pergamon Press, U.K. 6. Tropical Pacific near-surface currents estimated from altimeter, wind, and drifter data. 1999 - Gary S. E. Lagerloef, Gary T. Mitchum, Roger B. Lukas, Pearn P. Niiler., Journal of Geophysical Research, Volume 104, Issue C10, pages 23313–23326. 7. Meteorology Today: An introduction to weather, climate and the environment (2nd edition), 1985 - Ahrens, St. Paul, West Publ. House. 8. Meteorology-Understanding the atmosphere, 2012 - Steven A A	
Learning Outcomes	Detect watermasses. Understand the importance of sound in sea and know its implications for underwater communication/ detection of objects. Know ocean processes along surface and study ocean circulation. Measure atmospheric parameters.	