Name of the Programme: M. Sc.Marine Sciences
Course Code:MSC 509
Title of the Course: Estuarine and Coastal Physical Oceanography Practical
Number of Credits: 01
Effective from AY: 2022-23

Prerequisites for the course:	Core courses offered in the Semester I.	
Objective:	To delineate and identify regions of water-masses, most-efficient sound-channel and estimate ocean currents and measure atmospheric parameters.	
Content:	Identification of water masses and determination of stability of water column using T-S diagram (6 hours; References 1–4) Estimation of sound speed and determination of SOFAR channel in different parts of the world ocean (6 hours; References 1, 4) Analysis of wind stress over world ocean (3 hours; References 1–4 and 6) Computation and analysis of dynamic topography (6 hours; References 2, 3 and 5) Measurements of atmospheric pressure, humidity, minimum and maximum temperature, computation of absolute humidity, specific humidity – Mixing ratio (3 hours; References 6 and 7) Determination of cyclone intensity from satellite images using Dvorak technique (6 hours; References 8)	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.Colling, A. (2001). *Ocean circulation* (Second Edition) (Vol. 3). Butterworth-Heinemann in association with The Open University. 3.Pond, S., & Pickard, G. L. (1983). *Introductory Dynamical Oceanography (Second Edition).* Oxford, New York, Toronto, Sydney, Paris, Frankfurt: Pergamon Press. 4.Kennish, M. J. (2001). *Practical Handbook of Marine Science (Third Edition).*CRC Press. 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 Ahrens, C. D. (1985). *Meteorology Today: An Introduction to Weather, Climate and the Environment (Second Edition).* St. Paul, Minnesota, U.S.A.: West Publishing. 6.Ackerman, S. A., & Knox, J. A. (2012). *Meteorology–Understanding the atmosphere (Third Edition).* Jones & Bartlett	

	Learning Velden, C., Harper, B., Wells, F. Beven, J. L., II, Zehr, R. Olander, T., Mayfield, M., Guard, C., Lander, M., Edson, R, Avila, L., Burton, A., Turk, M., Kikuchi, A., Christian, A. Caroff, P., & 7.McCrone, P. (2006). The Dvorak Tropical Cyclone Intensity Estimation Technique: A Satellite-Based Method that Has Endured for over 30 Years. *Bulletin of the American Meteorological Society, 87(9),* 1195–1210. d.o.i.: https://doi.org/10.1175/BAMS-87-9-1195	
Course Outcome:	1. An ability to study physical oceanographic processes.	