

Semester	JAN 2022
Open to semester	6,8,22
Course code	EC3264/EC6234
Course title	Physical Oceanography
Credits	4 /4
Course Coordinator & participating faculty (if any)	Joy Merwin Monteiro
Nature of Course	Lectures
Pre-requisites	Geophysical Fluid Dynamics (either completed or doing concurrently)
Objectives (goals, type of students for whom useful, outcome etc)	This course provides students an overview of the oceanography from observational and dynamical perspectives. The aim will be to provide the student with an empirical description of the large scale ocean circulation and build further from an elementary fluid dynamics course and see how ocean circulation can be understood using dynamical principles.
Course contents (details of topics /sections with no. of lectures for each)	<p>The oceans as we observe them: Measurement of temperature and Salinity; introduction to measurement systems; qualitative description of the large scale circulation;</p> <p>Thermodynamics of seawater; Sea ice formation; brine rejection; deep water formation;</p> <p>Waves and Tides: wave geometry and speed; shallow and deep-water waves; the wave source and swell; interaction with the coast; breaking waves. Tide-generating forces; dynamics of the Earth-Moon-Sun system; astronomical periodicities; the equilibrium tide and the response of the Earth.</p> <p>Fluid dynamics of the ocean: Inertial Oscillations; Boundary layers; Ekman layer; Ekman pumping and its consequences; the deep ocean circulation and relationship to potential vorticity conservation; Western boundary intensification; Abyssal flow in the ocean</p> <p>Coastal Oceanography, Estuarine environment, their formation, water circulation and various biogeochemical</p>

	processes unique to estuaries
Evaluation /assessment	End-Sem Examination-30% Mid-Sem Examination-30% Others-40% Assignments%
Suggested readings (with full list of authors, publisher, year, edn etc.)	Introduction to Physical Oceanography by Robert H Stewart Atmosphere and Ocean Dynamics by Geoffrey Vallis.