

Course Syllabus

PHYSICAL OCEANOGRAPHY

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Program: Oceanographic Engineering

1. Course number and name

OCEG1050 - PHYSICAL OCEANOGRAPHY

2. Credits and contact hours

2 credits and 3 contact hours

3. Instructor's course or coordinator's name

JONATHAN MARCELO CEDEÑO OVIEDO

4. Text book, title, author, and year

- Stewart, Robert. Introduction to Physical Oceanography (Sept 2008 Edition)
 - a. Other supplemental materials
- Knauss, John A. & Newel Garfield. Introduction to Physical Oceanography (3rd Edition)
 - Pond, Stephen & George L. Pickard. Introductory Dynamical Oceanography (2nd Edition)
- Open University. Seawater: its composition, properties and behaviour (2nd Edition)
- Open University. Ocean circulation (2nd Edition)
- Sarachik, Edward S. & Mark A. Cane. El Niño-Southern Oscillation phenomenon (1st Edition)
- W. Cai, M.J. McPhaden, A.M. Grimm et al.. Climate impacts of the El Niño–Southern Oscillation on South America ()

5. Specific course information

- a. Brief description of the content of the course (catalog description)

This professional training course is designed to give the student an overview ocean dynamics, temporal and spatial variability of the ocean-atmosphere system. This is achieved through the analysis of properties of seawater (temperature, salinity, density), water masses, the equation of motion and their different balances, as well as of the main equatorial processes with an emphasis on the Equatorial Pacific.

- b. Prerequisites

PHYSICS: THERMODYNAMICS AND OPTICS - FISG1009

CLIMATOLOGY AND METEOROLOGY - OCEG1030

- c. This course is: Required

6. Specific goals for the course

- a. Specific outcomes of instruction

- 1.- Interpret the large-scale distribution of seawater properties to understand the physical, chemical, biological and geological processes that govern it.
- 2.- Analyze the basic principles of ocean physics, consequences of Earth rotation,

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stratification, and the dynamic of currents; starting with the data that allows to calculate those processes.

3.- Quantify ocean processes from in-situ data or remote sensing.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course

7. Brief list of topics to be covered

- 1.- Evaluation activities
- 2.- Water properties
- 3.- Equation of motion in oceanography
- 4.- Marine currents