

Course Syllabus

OCEANOGRAPHIC INFORMATION ANALYSIS

Printed by: jcedeno

Program: Oceanographic Engineering

1. Course number and name

OCEG1007 - OCEANOGRAPHIC INFORMATION ANALYSIS

2. Credits and contact hours

3 credits and 3 contact hours

3. Instructor's course or coordinator's name

JONATHAN MARCELO CEDEÑO OVIEDO

4. Text book, title, author, and year

- Thomson, Richard & William J. Emery. Data Analysis Methods in Physical Oceanography (3rd Edition)
 - a. Other supplemental materials
 - Longley, Paul A., Michael F. Goodchild, David J. Maguire & David W. Rhind. Geographic Information Systems and Science (4th Edition)
 - Wilks, Daniel S.. Statistical Methods in the Atmospheric Sciences (3rd Edition)
 - Talley, Lynne D., George L. Pickard, William J. Emery & James H. Swift. Descriptive Physical Oceanography (6th Edition)

5. Specific course information

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

This course studies the fundamental techniques of oceanographic data analysis at the spatial and temporal scales, in order to establish cause-effect relationships of the different phenomena (ocean-atmospheric) that govern climate, as well as to identify potential applications in the study of risk assesment.

- b. Prerequisites

STATISTICS - ESTG1005

PHYSICAL OCEANOGRAPHY - OCEG1003

- c. This course is: Required

6. Specific goals for the course

- a. Specific outcomes of instruction
 - 1.- Understand the spatio-temporal nature of oceanographic data for its adequate representation and visualization.
 - 2.- Apply data analysis techniques in the frequency domain to identify variability in a data record.
 - 3.- Construct climatic indexes based on multivariate analysis tools.
 - 4.- Design a geographic information system for applications in oceanography.
- b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other



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outcomes are addressed by the course

- An ability to apply oceanographic engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

7. Brief list of topics to be covered

- 1.- Spatial analysis with vector data
- 2.- Spatial analysis with raster data
- 3.- Exploratory data analysis and data quality control
- 4.- Time series analysis and multivariate analysis

