Course Syllabus

OCEANOGRAPHIC INFORMATION ANALYSIS

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Program: Oceanographic Engineering

1. Course number and name

OCEG1028 - 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, tittle, 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 teaches the fundamental techniques of oceanographic data analysis at the spatial and temporal scales in order to establish cause-effect relationships of different climate phenomena (oceanic-atmospheric); as well as to identify potential applications related to risk assessment.

b.   Prerequisites

STATISTICS - ESTG1034

PHYSICAL OCEANOGRAPHY - OCEG1050

c.   This course is: Required

6. Specific goals for the course

a.   Specific outcomes of instruction

1.- Understand the relationship between space and time of oceanographic data for its adequate representation and visualization.

2.- Apply data analysis techniques in the frequency domain to identify variability in data records.

3.- Construct climatic indexes based on multivariate analysis tools.

4.- Design a geographic information system for applications in oceanography.

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