



Course guide

250MEA012 - 250MEA012 - Environmental Oceanography

Last modified: 16/06/2024

Unit in charge: Barcelona School of Civil Engineering
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering.

Degree: MASTER'S DEGREE IN ENVIRONMENTAL ENGINEERING (Syllabus 2024). (Optional subject).

Academic year: 2024 **ECTS Credits:** 5.0 **Languages:** Spanish

LECTURER

Coordinating lecturer: MANUEL ESPINO INFANTES

Others: Espino Infantes, Manuel
Mösso Aranda, Octavio Cesar

TEACHING METHODOLOGY

The course consists of 3 hours per week of classroom activity (large size group).

The 13 hours in the large size groups are devoted to lectures, in which the teacher presents the basic concepts and topics of the subject, shows examples and solves exercises.

Support material in the form of a detailed teaching plan is provided using the virtual campus ATENEA: content, program of learning and assessment activities conducted and literature.

Although most of the sessions will be given in the language indicated, sessions supported by other occasional guest experts may be held in other languages.

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours small group	9,8	7.83
Hours medium group	9,8	7.83
Hours large group	25,5	20.38
Self study	80,0	63.95

Total learning time: 125.1 h



CONTENTS

Introduction

Description:

Impact of human activities on the oceans

Full-or-part-time: 7h 11m

Theory classes: 3h

Self study : 4h 11m

Coastal and Estuarine Hydrodynamics

Description:

waves and currents induced by waves

Tides and tidal currents

Wave and tides propagation

Full-or-part-time: 16h 48m

Theory classes: 4h

Practical classes: 3h

Self study : 9h 48m

Coastal erosion

Description:

Sediment dynamics and coastal erosion

Wave channel practices

Full-or-part-time: 12h

Theory classes: 2h

Laboratory classes: 3h

Self study : 7h

Open water hydrodynamics

Description:

Sea water temperature

Ekman model. Wind-induced circulation

Coastal upwelling and marine ecosystems

Sea water salinity

Residence time in estuaries

Ocean currents

Full-or-part-time: 28h 47m

Theory classes: 10h

Practical classes: 2h

Self study : 16h 47m



Marine pollution

Description:

Discharges from land to the sea
Outfall Design
Discharged from boats
Practiques of discharges into the sea
Oil spills

Full-or-part-time: 28h 47m

Theory classes: 3h
Practical classes: 3h
Laboratory classes: 6h
Self study : 16h 47m

GRADING SYSTEM

The mark of the course is obtained from the ratings of continuous assessment.

Continuous assessment consist in several activities, both individually and in group, of additive and training characteristics, carried out during the year (both in and out of the classroom).

The evaluation tests consist of a part with questions about concepts associated with the learning objectives of the course with regard to knowledge or understanding, and a part with a set of application exercises.

The final mark of the subject will be calculated, with the indicated weighting, from the following marks:

- Course work. oral presentation (30%)
- Computer model practices. wrtting report (30%)
- Final test (40%)

EXAMINATION RULES.

Failure to perform a continuous assessment activity in the scheduled period will result in a mark of zero in that activity.

BIBLIOGRAPHY

Basic:

- Beer, T. Enviromental oceanography. 2nd ed. Boca Raton [etc.]: CRC Press, 1997. ISBN 0849384257.

Complementary:

- Holthuijsen, L.H. Waves in oceanic and coastal waters. Cambridge: Cambridge University Press, 2007. ISBN 9780521860284.
- Dean, R.G.; Dalrymple, R.A. Coastal processes with engineering applications. Cambridge: Cambridge University Press, 2002. ISBN 0521495350.
- Lewis, R. Dispersion in estuaries and coastal waters. Chichester [etc.]: John Wiley and Sons, 1997. ISBN 0471961620.