

Course guide

210909 - H - Hydrology

Last modified: 14/12/2023

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

Degree: MASTER'S DEGREE IN LANDSCAPE ARCHITECTURE (Syllabus 2015). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 3.0 **Languages:** Catalan, Spanish, English

LECTURER

Coordinating lecturer: JOSEP MERCADÉ ALOY

Others: Primer quadrimestre:
JOSEP MERCADÉ ALOY - Grup: 2N1S

TEACHING METHODOLOGY

A combination of theoretical lessons and workshop studio will be designed, in order to present content to be working out in and out the classroom together with the teachers.

LEARNING OBJECTIVES OF THE SUBJECT

The aim of the subject is to recognize landscape dynamics, forms and processes that framework green infrastructure in large open spaces, intermediate mosaics and the strictly urban environment, in the context of civil and environmental engineering.

STUDY LOAD

Type	Hours	Percentage
Self study	48,0	64.00
Hours small group	9,0	12.00
Hours large group	18,0	24.00

Total learning time: 75 h

CONTENTS

Description:

01. Introduction to Landscape Engineering
02. Notions of geology: geological materials, rocks and structure of the earth and processes
03. From the geomorphology of the landscape to the geological risks: Dynamics, forms and processes
04. Interpretation of maps and geological profiles
05. Notions of surface and underground hydrology in the framework of the water cycle: free sheet, rain-runoff-propagation, groundwater flow
06. River engineering 1: river morphology, notions of river hydraulics and restoration of river ecosystems
07. River engineering 2: channeling, morphodynamic processes and accessibility
08. Natural water treatment in the framework of environmental engineering: elimination of pollutants, wetlands and lagoon
09. The project of alternative drainage systems: natural drainage, artificial drainage and stormwater management
10. Environmental charges and protective works in the framework of port engineering: waves and maritime climate, vertical facing dams and slopes
11. Longitudinal and transverse transport in the framework of coastal dynamics and coastal engineering: notions of longitudinal dynamics, beach profiles and dune system
12. Landscapes of territorial metabolism
13. Landscape engineering in the landscape planning and management project and processes

Full-or-part-time: 65h 20m

Practical classes: 23h 20m

Guided activities: 2h

Self study : 40h

GRADING SYSTEM

In order to evaluate the progress of the students, it is mandatory to present a summary of the field trips.
It will also be mandatory to pass a final exam of the subject.

Continuous evaluation

Continuous telematic evaluation

In online teaching situations, continuous assessment will be carried out synchronously and asynchronously by the means established by the University and the School, with a periodic record of academic activity through submissions, forums, questionnaires or any other means facilitated by the Atenea platform, or the alternatives provided to the teaching staff. In the situations in which this telematic teaching is a product of face-to-face teaching that has already begun, or for questions of extra-academic order, the changes in the weightings or regular control systems of the teaching will be communicated in detail to all students by the Athena of each subject.

Telematic final evaluation

If the continuous telematic evaluation is not positive, a second evaluation can be carried out, which will consist of a final test of a global nature in telematic format that will be established in accordance with the criteria of the professor responsible and the media and ICTs provided by the University or School.

The measures for adaptation to non-classroom teaching will be implemented in accordance with the criteria of ICT security and personal data protection to ensure compliance with the legislation on Personal Data Protection (RGPD and LOPDGD)



BIBLIOGRAPHY

Basic:

- McHarg, Ian L. Design with nature. New York, [NY] [etc.]: John Wiley & Sons, cop. 1992. ISBN 9780471114604.
- Dean, Robert G; Dalrymple, Robert A. Coastal processes : with engineering applications. Cambridge: Cambridge University Press, 2002. ISBN 0521495350.
- Hamblin, W. K. The earth's dynamic system. 8th ed. Upple Saddle River: Prentice-Hall, 1998. ISBN 0137453736.
- Història natural dels Països Catalans. Barcelona: Enciclopèdia Catalana, 1998-1999. ISBN 8485194527.
- Merritts, Dorothy J.. Environmental geology: an earth system science approach. New York: W. H. Freeman and Company, 1998. ISBN 0716728346.
- Montgomery, Carla W. Environmental geology. 8th ed. Boston: McGraw-Hill, 2003. ISBN 9780072826913.
- Martín Vide, Juan P. Ingeniería de ríos. 2a ed. Barcelona: Edicions UPC, 2006. ISBN 9788483019009.

RESOURCES

Hyperlink:

- Intranet docent.. <http://atenea.upc.edu/moodle/>

Other resources:

Teaching Intranet: YES

Cartographic material of study of the "Institut Cartogràfic de Catalunya" in digital format.