



Universitat de Lleida

DEGREE CURRICULUM  
**GESTIÓ DE RECURSOS  
HÍDRICS**

Coordination: BATALLA VILLANUEVA, RAMON J.

Academic year 2022-23

## Subject's general information

<b>Subject name</b>	GESTIÓ DE RECURSOS HÍDRICS			
<b>Code</b>	102463			
<b>Semester</b>	2nd Q(SEMESTER) CONTINUED EVALUATION			
<b>Typology</b>	Degree	Course	Character	Modality
	Double degree: Bachelor's degree in Forest Engineering and Bachelor's degree in Nature Conservation	4	OPTIONAL	Attendance-based
<b>Course number of credits (ECTS)</b>	6			
<b>Type of activity, credits, and groups</b>	<b>Activity type</b>	PRACAMP	PRAULA	TEORIA
	<b>Number of credits</b>	1	2	3
	<b>Number of groups</b>	1	1	1
<b>Coordination</b>	BATALLA VILLANUEVA, RAMON J.			
<b>Department</b>	ENVIRONMENT AND SOIL SCIENCES			
<b>Teaching load distribution between lectures and independent student work</b>	<ul style="list-style-type: none"> <li>- Face-to-face teaching (classroom or online): 60 hours</li> <li>- Student's autonomous work: 90 hours</li> </ul>			
<b>Important information on data processing</b>	Consult <a href="#">this link</a> for more information.			
<b>Language</b>	Catalan / Spanish			
<b>Distribution of credits</b>	<ul style="list-style-type: none"> <li>- Theory (classroom or online): 3</li> <li>- Practical work (classroom and fieldwork): 3</li> </ul>			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
BATALLA VILLANUEVA, RAMON J.	ramon.batalla@udl.cat	1,5	
PIQUÉ ALTÉS, GEMMA	gemma.piquealtes@udl.cat	4,1	
VERICAT QUEROL, DAMIAN	damia.vericat@udl.cat	,4	

## Subject's extra information

This course expands and develops the knowledge on hydrology and water resources that the student has learned during the degree, especially in relation to the hydroclimatic characteristics of drainage basins in Mediterranean areas. The course also offers theoretical and practical knowledge for the acquisition and hydroclimatic data and information processing, the extraction of knowledge on hydrological dynamics, and its relationship with other environmental variables (relief, rivers, vegetation, soils) focused on water management in the territory. In addition, a series of calculation, analysis and modeling tools will be presented and applied to hydrological and hydraulic data.

## Learning objectives

- O.1.** Understanding the functioning of water in the physical environment and its relationship with other components of the natural system (relief, climate) and anthropic activity, especially in Mediterranean climate areas.
- O.2.** Learning and application of tools for the acquisition and analysis of hydrological data and its interpretation.

The course shall be developed in person and / or virtual modes depending on the limitations or restrictions imposed by the competent bodies (University of Lleida, Generalitat de Catalunya, Gobierno de España) during the course of the corresponding semester. All the contents and methodological axes have already been adapted to guarantee the achievement of the subject's competencies in whatever way it is finally taught. In the event that the field sessions cannot be carried out, they will be replaced by theoretical classes in which techniques and methods will be presented during specific presentations.

## Competences

- Ability to identify the different physical elements of the forest environment and renewable natural resources (water) susceptible of protection, conservation and use in the forest field.
- Ability to analyze the ecological structure and function of forest systems and resources, including landscapes.
- Knowledge of the degradation processes that affect forest systems and resources and capacity to the use of techniques to protect the forest environment, forest hydrological restoration and conservation of the biodiversity.
- Ability to solve technical problems derived from the management of natural areas.
- Ability to design, direct, elaborate, implement and interpret projects and plans, as well as to write technical reports, recognition reports, evaluations, compartments and appraisals.

- Ability to understand, interpret and adopt scientific advances in the forest field, to develop and transfer technology and to work in a multilingual and multidisciplinary environment

## Subject contents

### **THEORY:**

- The drainage basin
- Water balance, components and effects of the global change
- Fluvial hydrology
- Hydrology and water resources in the Mediterranean
- Water governance: institutional framework

### **CLASSROOM PRACTICES:**

- Measurement and treatment of hydroclimatic data (water balance, calculation of discharges and flood levels, estimation of hydrological extremes, floods and droughts, flow frequency curves, runoff coefficients, comparison between basins)

### **FIELD WORK:**

- Measurement of fluvial variables and hydrometric controls. Collection, calculation and data processing

## Methodology

- Face-to-face or online sessions in the classroom
- Classroom practices (face-to-face or online) related to the theoretical content of the subject
- Field work to learn hydrometric measurements and sampling techniques (data collection, calculations, report preparation and presentation of the work)
- Individual and group tutorials
- Weekly monitoring of the progress of each practice in the classroom (virtual)
- Continuous delivery of exercises
- Use of computer tools and statistics: databases
- Demonstration of tools by teachers (face-to-face or through videoconferences)
- Specific work outside the classroom by the student
- Doubts solving through videoconferences
- Solving problems demonstration videos
- Set-up of forums (Virtual Campus) for the discussion of problems that arise when carrying out the practical exercises

## Development plan

This subject is optional and it complements and develops content that students have acquired in previous subjects

(e.g. Forest Hydrology) throughout the degree, but with a broader vision from the territorial point of view and application to management.

## Evaluation

- Continuous assessment through the delivery of six classroom practices throughout the semester (40%)
- First partial exam according to the ETSEA academic calendar (20%). This will be an oral exam
- Second partial exam according to the ETSEA academic calendar (20%). This will be an oral exam
- ALL the theoretical and practical teaching materials taught and given in the classroom are evaluable, as well as the Hydrology chapter of the Physical Geography Textbook available in .pdf on the Virtual Campus.
- Up to + 10% of the final grade will be valued according to attendance at the training activities of the course (theoretical classes, classroom practices and field work)
- Any attempt to plagiarize classroom and field practices or copy an exam will automatically lead to the fail of subject (mark = 0)

## Bibliography

### Basic reading (Textbook)

- BALASCH, J.C., BATALLA, R.J., MÀSICH, J.M., VERICAT, D. (2016) (eds.): Geografia física. Fundació per la Universitat Oberta de Catalunya. Barcelona, 408 p.

### Complementary materials

- HERAS, R. (1972): Manual de Hidrología. Madrid: Instituto de Hidrología.
- MARCO, J., REYES, M. (1982): Hidrología. Universidad Politécnica de Valencia, Servicio de Publicaciones, 387 p.
- BROOKS, D.B. (2000): Water Balances in the Eastern Mediterranean. International Development Research Centre. 160 p.
- SABATER S., BARCELÓ, D. et al (2012): Water Scarcity in the Mediterranean: Perspectives Under Global Change. The Handbook of Environmental Chemistry. 234 p.
- CONACHER, A, SALA, M. (1998): Land Degradation in Mediterranean Environments. Wiley-Blackwell, Chichester, 560 p.

### Complementary materials (practical work)

- BATALLA, R.J. (1998): Apunts i pràctiques per a l'estudi dels processos fluvials. Lleida, Paperkite, Col·lecció Quaderns DMACS, 14, 78 p. DL. L-767-1998.
- UBEDA, X, SALA, M. ROVIRA, A., BATALLA, R.J. (2002): Guia pràctica per a l'estudi de l'aigua. Col·lecció Textos Docents 225. Edicions de la Universitat de Barcelona. 1-80. ISBN 84-8338-319-5.