



Universitat de Lleida

DEGREE CURRICULUM
**RIVER REHABILITATION AND
RESTORATION**

Coordination: VERICAT QUEROL, DAMIAN

Academic year 2023-24

Subject's general information

Subject name	RIVER REHABILITATION AND RESTORATION			
Code	11384			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Erasmus Mundus Master's Programme in Mediterranean Forestry and Natural Resources Management (MEDFOR)	1	OPTIONAL	Attendance-based
Course number of credits (ECTS)	2			
Type of activity, credits, and groups	Activity type	PRACAMP	PRAULA	TEORIA
	Number of credits	0.5	0.5	1
	Number of groups	1	1	1
Coordination	VERICAT QUEROL, DAMIAN			
Department	ENVIRONMENT AND SOIL SCIENCES AND CHEMISTRY			
Teaching load distribution between lectures and independent student work	<p>1. Lectures and exercises (20 hours, classroom or virtual lectures according to the limitations imposed by the COVID-19 pandemic). Here we include lectures (theory), exercises the students will develop with the supervision of the lectures, follow-up lectures, field work and, if possible, invited conferences.</p> <p>2. Additional work: 35 hours. In these hours the student will have to go beyond the contents that are given in the lectures by reading the basic materials given in class and other complementary readings. In addition, it is during this work when the students will complete the practical exercises that will be developed, mostly, in the classroom with the teachers.</p> <p>Note: the subject may be developed in person or virtually depending on the limitations or restrictions that may be imposed by the competent bodies (University of Lleida, Generalitat de Catalunya, Spanish Government) during the semester. All the contents and methodological axes have already been adapted accordingly to guarantee the competences of the subject, whatever the way in which the subject is taught.</p>			
Important information on data processing	Consult this link for more information.			
Language	English			
Distribution of credits	<p>Drainage basins and river systems. River restoration and rehabilitation: principles (0.25 credits)</p> <p>River degradation: Why is it necessary to restore or rehabilitate rivers? (0.25 credits)</p> <p>Measurements and characterization (1 credit)</p> <p>Environmental flows and physical habitat (0.5 credits)</p>			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
MARTINEZ CAPEL, FRANCISCO	fmcapel@dihma.upv.es	1	
VERICAT QUEROL, DAMIAN	damia.vericat@udl.cat	1	

Subject's extra information

See more information regarding to the subject [here](#).

Learning objectives

- Drainage basins and fluvial systems. River Restoration & Rehabilitation: principles
- Degradation of rivers: Why do rivers need to be restored or rehabilitated?
- Measuring and characterising
- Environmental flows and Physical Habitat

Competences

- Apply their knowledge to their work or vocation in a professional way and possess the skills that are usually demonstrated through the elaboration and defense of arguments and problem solving within their area of study.
- Know how to develop the learning skills necessary to undertake further studies with a high degree of autonomy.
- Manage and use the methods and techniques of analysis and interpretation of statistical sources.

Subject contents

- Drainage basins and fluvial systems. River Restoration & Rehabilitation: principles
- Degradation of rivers: Why do rivers need to be restored or rehabilitated?
- Measuring and characterising
- Environmental flows and Physical Habitat

Methodology

- Master classes: fundamentals and principles
- Literature review
- Field work: data collection (Noguera Ribagorçana River, 30 minutes from Lleida, cars will be provided)
- Lab Work: Data Analysis

Development plan

LECTURES: PRESENTATIONS

1.Drainage Basins: General Aspects (DV)

- 2.Rivers: Water & Sediments (DV)
- 3.Flow discharge & Sediment Transport (DV)
- 4.Global Changes and broad impacts on fluvial systems (DV)
- 5.Environmental Flows: Definition & Approaches (FMC)
- 6.Habitat Simulation: Tools & Techniques (FMC)

FIELD WORK: TASKS

- 1.Assessing the 'status' of rivers through indices: QBR, IHG (Demonstration)
- 2.Characterizing river-bed sediments
- 3.Channel Topography (2 Cross Sections)
- 4.Flow velocity (in each Cross Section)
- 5.Refugee and particle size (in each Cross Section)

LAB WORK: COMPUTERS

- 1.Flow Regimes: characteristics & impacts
- 2.Characterizing river-bed sediments: Cumulative Distribution Functions and Percentiles
- 3.Habitat Simulation: Input data, Calibration, Simulation and Interpretation.

Evaluation

Continuous evaluation:

Literature review block: why do we need to restore or rehabilitate rivers?

- Document of maximum 10 pages. 25% of the final mark.

Fieldwork block

- Data acquisition in the field

Practice block 1: Granulometry

- Classroom practices and independent work. Continuous and mandatory delivery according to the set delivery dates. 25% of the final mark.

Practice block 2: Hydrology

- Classroom practices and independent work. Continuous and mandatory delivery according to the set delivery dates. 25% of the final grade.

Practice block 3: Habitat simulation

- Classroom practices and independent work. Continuous and mandatory delivery according to the set delivery dates. 25% of the final grade.

Second-chance

- In the event that the average of the blocks is not equal to or higher than 5, the suspended blocks must be recovered within the period set by the centre. In the case of recovery, the maximum grade cannot be higher than 5.

Plagiarism or copying

- Law 2/2022 on university coexistence regulates what is considered academic fraud: any premeditated behavior tending to falsify the results of an exam, one's own or someone else's, taken as a requirement to pass a subject or certify academic performance. Offenses can be serious or very serious. You can consult the [UdL's Regulations on university coexistence](#).
- If copying or plagiarism is done with fraudulent means, the assessment activity will be withdrawn (therefore it will be suspended) and a report and the evidence will be sent to the coordination of the degree and to the heads of studies to start a disciplinary file. The applicable sanctions include, among others and depending on the seriousness of the fault, the loss of the right to be evaluated for the subject, the loss of enrollment for a semester or a course or expulsion for up to three years .

Alternative assessment/evaluation

Students who combine their studies with a full-time job and/or due to family reconciliation have the right to request an alternative assessment at the beginning of the semester. The student who wants to take part in the alternative assessment must present a work contract or justify, in writing addressed to the director of the school, the reasons that make it impossible for him or her to take the continuous assessment within a period of five (5) days since the beginning of the semester. For more information, send an email to the ETSEAFIV Academic Secretary (etsea.secretariacentre@udl.cat). The alternative assessment test will consist of the delivery of all practices. Practices are recoverable.

Bibliography

Battalla, R.J., Vericat, D., Farguell, J., Úbeda, X., Garcia, C. (2020) Processos hidrològics i geomorfològics als rius: context i exemples per a interpretar la seva resposta a episodis d'alta magnitud com el Glòria. Treballs de la Societat Catalana de Geografia 89: 55-87.

Dodds, W., D., Whiles, M., R. (2020): Chapter 6 - Physiography of Flowing Water. In Freshwater Ecology: Concepts and Environmental Applications of Limnology (Third Edition), Walter K. Dodds, Matt R. Whiles (Eds.). Academic Press, Pages 121-153. ISBN 9780128132555.

Dufour, S., Piégay, H. (2009): From the myth of a lost paradise to targeted river restoration: forget natural references and focus on human benefits. River Research and Applications 24: 1-14.

González del Tánago, M., García de Jalón, D., Román, M. (2012): River Restoration in Spain: Theoretical and Practical Approach in the Context of the European Water Framework Directive. Environmental Management 50(1): 123-139.

Morandi, B., Piégay, H., Lamourox, N., Vaudor, L. (2014): How is success or failure in river -restoration projects evaluated? Feedback from French restoration projects. Journal of Environmental Management 137: 178-188.

Rinaldi, M., Wyżga, B., Dufour, S., Bertoldi, W., Gurnell, A. (2013): 12.4 River Processes and Implications for Fluvial Ecogeomorphology: A European Perspective. In Treatise on Geomorphology, John F. Shroder (ed.), Academic Press, Pages 37-52. ISBN 9780080885223.

Wheaton, J.M. (2005): Review of River Restoration Motives and Objectives. Unpublished Review, Southampton, U.K., 12 pp.

Wohl, E., Lane, S.N., Wilcox, A.C. (2015): The science and practice of river restoration. Water Resour. Res., 51, 5974–5997, doi:10.1002/2014WR016874.

(more bibliography will be presented in the resource section)