



Universitat de Lleida

## DEGREE CURRICULUM

# HYDROLOGIC MANAGEMENT

Coordination: PIQUÉ ALTÉS, GEMMA

Academic year 2023-24

## Subject's general information

Subject name	HYDROLOGIC MANAGEMENT			
Code	12433			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Master's Degree in Mountain Areas Management	1	OPTIONAL	Blended learning
Course number of credits (ECTS)	3			
Type of activity, credits, and groups	Activity type	PRAULA	TEORIA	
	Number of credits	1.5	1.5	
	Number of groups	1	1	
Coordination	PIQUÉ ALTÉS, GEMMA			
Department	ENVIRONMENT AND SOIL SCIENCES AND CHEMISTRY			
Teaching load distribution between lectures and independent student work	No presential courses			
Important information on data processing	Consult <a href="#">this link</a> for more information.			
Language	Spanish Catalan			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
BATALLA VILLANUEVA, RAMON J.	ramon.batalla@udl.cat	,2	To be arranged by e-mail.
PIQUÉ ALTÉS, GEMMA	gemma.piquealtés@udl.cat	2,8	To be arranged by e-mail.

## Learning objectives

Know the keys to understanding the hydrological cycle and the associated risks in mountain areas. Propose management instruments and mitigation and response mechanisms.

## Competences

General:

CG1 Assess the mechanisms of interaction of society with the environment in the perspective of decision-making

CG2 Manage and use the methods and techniques of analysis and interpretation of the variables and socio-economic and environmental statistical sources.

CG4 Analyze the underlying dynamics of new and complex situations, design alternative resolution strategies and take advantage of the potential for improvement.

Specific:

CE3 Design, write and develop plans and projects for risk prevention, resource management and physical planning.

## Subject contents

Below are the specific contents of the subject together with the tasks to be performed. Students will have theoretical presentations, demonstration videos, tools and other materials for the development of the tasks associated with the contents of the subject. In addition, they will have a series of discussion forums for the solution of doubts or discussion of those aspects that are considered opportune.

1. Characterization of the water regime in Mountain Rivers in relation to changes in land and water uses (dams).
  - Tasks: Review of two scientific articles
2. Learning hydrological analysis tools
  - Tasks: Hydrological analysis exercises
3. Calculation of return periods (recurrence intervals) and hydraulic analysis
  - Tasks: Calculation of return periods (Tx) of a series of maximum flows using probability functions and hydraulic exercises
4. Determination of flows associated with maximum flood levels.
  - Tasks: Determine flood levels associated with specific peak flows

## 5. Case study: Hydromorphological characterization of the Garonne flood in 2013.

- Tasks: Bibliographic and online search to determine the synoptic situation of the episode and the magnitude and effects of the flood

## Methodology

### 7. Online theory

7.1 Reading of written / audiovisual / graphic documentation prepared 10 h

7.2 Web conference

7.3 Webinar

### 8. Practice / online jobs

8.1 Discussion forums

8.2 Self-monitoring activities

8.3 Writing reports and projects 25 h

8.4 Problem practices 10 h

8.5 Searching for information

8.6 Case study

### 9. Validation tests

9.1 Online presentation / validation test

## Development plan

- This is an optional subject in which students will be able to acquire knowledge related to the study and characterization of the flow regime of river systems and hydrological risks. Specifically, through the development of a series of practical activities and case studies, students will acquire skills for the establishment of water balances in river basins, for the characterization and analysis of flow regimes in Mountain Rivers, for the determination of flows associated with flood levels, for the calculation of return periods (frequency-magnitude), as well as tools of hydrological and hydraulic analysis.
- Information on data protection in the audiovisual register. In accordance with current regulations on the protection of personal data, we inform you that:
  - The organisation responsible for the recording and use of the image and voice is the University of Lleida - UdL (contact details of the representative: General Secretariat. Plaza Víctor Siurana, 1, 25003 Lleida; sg@udl.cat; contact details of the data protection officer: dpd@udl.cat).
  - The recorded images and voices shall be used exclusively for teaching purposes.
  - The recorded images and voices shall be saved and preserved until the end of the current academic year, and shall be destroyed in accordance with the terms and conditions specified in the regulations on the preservation and disposal of administrative documents of the UdL, and the documentary evaluation tables approved by the Generalitat de Catalunya (<http://www.udl.cat/ca/serveis/arxiu/>).
  - The voices and images are considered necessary to teach this subject, and teaching is a right and a duty of the teaching staff of the Universities, which they must exercise under academic freedom, as provided for

in article 33.2 of the Organic Law of Universities (Ley Orgánica de Universidades) 6/2001, of December 21. For this reason, the UdL does not need the consent of the students to register their voices and images with the sole and exclusive purpose of teaching in this particular subject.

- The UdL shall not transfer the data to third parties, except in the cases strictly provided for by the Law.
- The student can access their data; request correction, deletion or portability; object to its processing and request its limitation, as long as it is compatible with the purposes of teaching, by writing to [dpd@udl.cat](mailto:dpd@udl.cat). You can also submit a complaint to the Catalan Data Protection Authority, via a mail to its website (<https://seu.apd.cat>) or other non-electronic means.

## Evaluation

Evaluation systems:
Internship work (see specifications in the evaluation blocks)
Reports, analysis reports or applied projects
Participation in forums and other online activities
Virtual campus usage records
Self-monitoring tests
Online validation

### Evaluation blocks

- Block #1. Articles review (12.5% of the mark).
- Block #2. Hydrological analysis tools (30% of the mark).
- Block #3. Calculation of return periods and hydraulic analysis (30% of the mark)
- Block #4. Determination of flows associated with maximum flood levels (15% of the mark)
- Block #5. Case study (12.5% of the mark)

### General considerations

- The submission is continuous and **compulsory** on the established dates. If not submitted on the due date, it will be possible to submit the assignment on the resit date. If the submission is made on the day of the resit, the maximum mark that can be obtained will be a 5.
- The final mark is the weighted average of the three blocks according to the weighting factors indicated above. In order to qualify for the average, the minimum mark for blocks #2, #3 and #4 must be a 5.

### Recovery

Blocks #2, #3 and #4 can be resat. In this case, the maximum mark that can be obtained will be a 5.

### Copy or plagiarism

If academic fraud or spontaneous copying is detected, we will apply what is established in the Regulations for the Assessment and Grading of Student Learning in UdL Bachelor's and Master's Degrees.

## Alternative evaluation

Students who want to ask for alternative assessment must submit an employment contract or justify, in a letter addressed to the dean, the reasons that make it impossible for him/her to carry out the continuous assessment within five (5) days after the beginning of the semester. For information, please send an e-mail to [lletres.secretariacentre@udl.cat](mailto:lletres.secretariacentre@udl.cat) or ask for information at the Faculty's academic office (Secretaria Acadèmica de la Facultat de Lletres).

The alternative evaluation will consist of the submission of all the activities corresponding to the five evaluation blocks at the end of the course (see established date in the calendar). Blocks #2, #3 and #4 may be resat with a maximum mark of 5.

## Bibliography

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HUGGETT, R.J. (2007): Fundamentals of Geomorphology, Routledge, Oxon, United Kingdom, 386 p.

LEOPOLD, LUNA B., WOLMAN, M.G., AND MILLER, J.P. (1964): Fluvial Processes in Geomorphology, San Francisco, W.H. Freeman and Co., 522p.

MARCO, J., REYES, M. (1982): Hidrología. Universidad Politécnica de Valencia, Servicio de Publicaciones, 387p.

RICHARDS K.S. (1982): Rivers, Form and Process in Alluvial Channels. Taylor & Francis, New York, 358 p.

STRAHLER, A. (1987): Geografía Física. Omega, Barcelona, 767 p.

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