Universitat de Lleida

DEGREE CURRICULUM

NATURAL RISKS IN ALPINE AREAS

Coordination: SCHULTE , LOTHAR

Academic year 2023-24

NATURAL RISKS IN ALPINE AREAS 2023-24

Subject's general information

Subject name	NATURAL RISKS IN ALPINE AREAS
Code	12434
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION
Typology	<table><tr><th>Degree</th><th>Course</th><th>Character</th><th>Modality</th></tr><tr><td>Master's Degree in Mountain Areas Management</td><td>1</td><td>OPTIONAL</td><td>Blended learning</td></tr></table>
Course number of credits (ECTS)	3
Type of activity, credits, and groups	<table><tr><th>Activity type</th><th>PRAULA</th><th>TEORIA</th></tr><tr><th>Number of credits</th><td>1.5</td><td>1.5</td></tr><tr><th>Number of groups</th><td>1</td><td>1</td></tr></table>
Coordination	SCHULTE , LOTHAR
Department	-SENSE DEPARTAMENT-
Teaching load distribution between lectures and independent student work	Face-to-face hours: 30 non-present hours: 45
Important information on data processing	Consult this link for more information.
Language	Catalan Spanish

NATURAL RISKS IN ALPINE AREAS 2023-24

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
PAUL AGUSTI, DANIEL	daniel.paul@udl.cat	0	Arrange by mail
SALVA CATARINEU, MONTSERRAT	salva@ub.edu	0	Arrange by mail
SCHULTE , LOTHAR	schulte@ub.edu	3	Arrange by mail

Subject's extra information

In all workshops, the master's degree co-finances part of the accommodation and maintenance costs. This is possible thanks to the additional funding provided by the Institute for the Development and Promotion of the Upper Pyrenees and Aran (IDAPA). In the case of the optional subject "Natural risks in alpine areas", which takes place in the Swiss Alps, the high cost of accommodation and other expenses in Swiss territory means that enrolled students will have to co-finance a part of the cost of the trip and stay, which is calculated at a minimum of €500 per person.

Learning objectives

- To understand natural mountain systems, human activities, impact and their interaction.
- Detect evidence of the response of the natural and anthropic environment to climatic changes.
- Inventory of Natural hazards, mapping and interpretation of extreme events in mountain areas.
- To carry out an integrated spatial-temporal analysis of natural hazards.
- To understand management instruments and mitigation mechanisms

Competences

basics

B10 That students possess the learning skills that enable them to continue studying in a way that will be largely self-directed or autonomous (*)

generals

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

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

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

specific

CE2 Analyses, interprets and evaluates the processes of change and environmental conflicts in attention to the preservation of biodiversity and environmental balances in mountain areas.

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

CE4 Identify essential cartographic sources and apply Geographic Information Systems to physical and social reality

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Subject contents

1. Climatic and environmental changes in the Alps.

2. Inventory of natural hazards: atmospheric-meteorological, glacial and gravitational processes, floods and avalanches.

3. History of natural disasters and long data series of extreme events.

4. Process and impact mapping: magnitude and spatial distribution of personal and economic damages.

5. Frequency analysis of extreme events and risk assessment.

6. The Bernese Alps, case study I: multi-archive integration of historical extreme events in the Bernese Alps.

7. The Bernese Alps, case study II: integrated natural hazard management and mitigation strategies.

Methodology

Teaching methods (Formative activities) Total hours
theory
Master classes 0
Introductory activities 2
Readings 0

visits
Field trips 30

practice
Debate/analysis and reflection 0

I work
Information search 11
Tutoring 2
Drafting of reports and projects 30

Online theory
Reading written/audiovisual/graphic documentation prepared 0
Web conference 0
Webinar 0

Online practice/work
Discussion forums 0
Self-tracking activities 0
Drafting of reports and projects 0
Practice problems 0
Information search 0
Case study 0

Validation tests

Online presentation/validation test 0

Development plan

The course consists of a field trip to the Swiss Alps. During the field work several locations will be visited (Upper Hasli Valley, Lower Hasli Valley, Bödeli delta, Grindelwald Valley and Kander delta), where the impacts of climate change on natural high mountain systems (e.g. Grindelwald Glacier), extreme event processes of (mixed) gravity processes (e.g. Spreitlaui and Rotlaui debris flows, rock fall on the eastern flank of the Eiger Eiger), Glacial Outburst Flood (GLOF) processes (e.g. Grindelwald Glacier), mass movement processes (e.g. Hasli Lower Valley landslides), earthquakes and tsunamis (Bödeli Delta and Lake Thun) and floods (e.g. Aare, Lütschine and Kander Rivers) occurred.

During the stops the students will be introduced to various methods and techniques to reconstruct extreme events (historical and archaeological sources, lichenometry, dendromorphology, geomorphology, sedimentology) and integrate multi-archive data sets.

Examples of areas affected by the catastrophic hydrological event of August 2005 (Brienz, Wilderswil, Guttannen) will also be examined. Finally, the integrated flood protection concept of the Lütschine River (Bödeli Project) and the first hydraulic project in Switzerland (Kander River, 1714 CE) will be presented. Traditional-historical disaster risk reduction measures and concepts will be analysed and compared with current projects. Possible synergistic effects and different implications of local communities and regional and state stakeholders will be assessed.

Evaluation

Field notebook 20%
Exit report 40%
Participation and interventions 40%

Bibliography

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