

Syllabus

Course description

Course title	Natural risks in mountain areas: processes and mitigation strategies
Course code	47052
Scientific sector	AGR/08
Degree	Environmental Management of Mountain Areas
Semester	1
Year	I
Academic year	2022/2023
Credits	3
Modular	no

Total lecturing hours	20
Total lab hours	-
Total exercise hours	10
Attendance	Optional
Prerequisites	-
Course page	Course Offering - enrolled from 2021 / Free University of Bozen-Bolzano (unibz.it)

Specific educational objectives	<p>This course belongs to those characterizing the Master program.</p> <p>By the end of the course, the student is expected to have acquired: 1) the most updated scientific knowledge on the main characteristics of natural hazards in mountain areas; 2) the capacity to predict the possible interactions between fluvial and colluvial processes at the basin scale; 3) the capability to identify the most adequate structural and non-structural measures to mitigate the risks associated to natural hazards</p>
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Lecturer	Francesco Comiti, building K, office K203, email francesco.comiti@unibz.it , tel: 0471017126
Scientific sector of the lecturer	AGR/08
Teaching language	English
Office hours	Any time, upon prior arrangement by email
Teaching assistant (if any)	Johannes Holzner
Office hours	upon arrangement by email
List of topics covered	<p>The course will cover the following topics:</p> <ol style="list-style-type: none"> 1. Basics of mountain geomorphology 2. Hillslope processes (snow avalanches, landslides) 3. Debris flows processes 4. Glacial and periglacial processes 5. Flood processes in mountain streams 6. Definition of hazard, vulnerability and risk

	<p>7. Modelling tools for natural hazards prediction 8. Structural and non-structural mitigation measures</p>
Teaching format	<p>Theoretical concepts are presented in the class by the Professor and field excursions are led by the Professor with the teaching assistant. Power Point presentations of the lectures will be made available on the Moodle website. Additional material will be provided on selected topics.</p>
Learning outcomes	<p>Knowledge and understanding of: i) main geomorphological processes typical of mountain areas; ii) mapping natural hazards and related risks in mountain areas; iii) pros and cons of possible management strategies.</p> <p>Applying knowledge and understanding to geomorphological analysis of mountain landscapes and in the proposal of the most suitable risk mitigation measures.</p> <p>Making judgements on types and magnitude of natural hazards and management options through the personal interpretation of the study areas visited during the field trip and GIS analysis.</p> <p>Communication skills to present basic and applied aspects of geomorphological processes in mountain areas and of management strategies to stakeholders, scientists, and the public clearly and unambiguously with pertinent and adequate technical terminology.</p> <p>Learning skills to autonomously deepen and update the knowledge acquired during the course seeking relevant information on scientific and technical literature, for their future professional and/or academic studies</p>
Assessment	<p>The assessment of students' outcomes will be carried out through i) oral exam and ii) individual written report.</p>
Assessment language	<p>English</p>
Evaluation criteria and criteria for awarding marks	<p>The mark will be assigned based on an oral exam (80 %) and on an individual report (20 %). Relevant for assessment of student reports: ability to use correct technical terminology, to perform GIS-based morphological analysis and to apply a critical thinking. Relevant for the oral exam assessment are correctness and clarity of answers, mastery of the technical language, capability to establish relationships between different topics.</p>
Required readings	<ul style="list-style-type: none"> • P. L. Bierman and D. R. Montgomery (2013) Key concepts in Geomorphology. Macmillan learning (selected chapters)

	<ul style="list-style-type: none">• Scientific papers provided in class
Supplementary readings	<ul style="list-style-type: none">• Additional scientific papers provided in class