Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course title	Geomatics and landscape planning
Course code	47001
Scientific sector	GEO/04 - ICAR/20
Degree	Environmental management of mountain areas
Semester	I
Year	I
Academic year	2023-24
Credits	6
Modular	*Yes*

Total lecturing hours	40 (20 + 20)
Total lab hours	-
Total exercise hours	20 (10 + 10)
Attendance	Recommended
Prerequisites	
Course page	

Specific educational objectives	The course belongs to the class related ("affini") in the curriculum "Environmental Management of Mountain Areas (EMMA)". It aims to teach both scientific foundations and practical methods. Geomatics incorporates Geographic Information Systems (GIS), cartography, and GPS, along with other spatial sciences. It is designed to give students an introduction to spatial information and the current and emerging technologies for accessing, analyzing, and communicating that information. In the practical part, students will learn when and how to apply the acquired knowledge using real world case studies. Landscape planning organizes the special requirements of different land uses into a visually satisfying and healthily functioning whole. Students will learn how to spatially plan mountain regions to increase the biological and cultural richness of the landscape, to have adequate forest cover, wildlife and greater biological diversity, and a harmonious balance between humans and nature. They will see how the mountain landscape functions and is used by people and how design interventions influence this functioning and use. By the end of the course, the student is expected to have acquired: 1) the fundamental concepts of a GIS including spatial

	data models, spatial analysis and cartographic principles; 2) the ability to manipulate and manage large spatial datasets adequately; 3) the ability to apply state of the art GIS software packages on environmental datasets; 4) the ability to analyze and critically question methods and results; 5) the key concepts and operational stages of landscape and land-use planning; 6) skills in collecting and interpreting relevant information to inform planning processes; 7) the ability to apply key methods to support planning processes; 8) hands-on experience with case studies in mountain areas.

Module 1	**Geomatics**
Lecturer	Dr. Egarter-Vigl Lukas
Scientific sector of the lecturer	GEO/04
Teaching language	English
Office hours	See timetable
Teaching assistant *(if any)*	
Office hours	-
List of topics covered	The course will cover the following topics: 1. Introduction to GIS concepts and techniques 2. Projections and geographical reference systems 3. Spatial data structure (vector/raster) 4. Spatial data management 5. Spatial data analysis 6. Data visualization and map creation
Teaching format	Frontal lectures and exercises on the computer. PPP and data will be available on a dedicated MS Teams site.

Module 2	**Landscape planning**
Lecturer	Tommaso Sitzia*, office,* tommaso.sitzia@unibz.it*, tel., lecturer's page*
Scientific sector of the lecturer	*AGR/05*
Teaching language	English
Office hours	See timetable
List of topics covered	Introduction. Overview of the course and expectations. Characteristics, distribution, and importance of mountainous landscapes: physical features, biodiversity, ecosystem services, cultural significance, environmental and social dynamics. Challenges of mountainous regions. Exercise: Identifying and describing mountainous study areas for the project assignments. Definition, necessity, and limits of planning. Gender and planning. Science and planning. Geography and planning. Modern planning. Single and multi-purpose planning. GIS-

	based planning. Eco-anxiety and planning. Social networking and planning. Exercise: Finding and exploring geoportals and other source of information for the project assignment study areas. Definition and implementation of landscape. Statutory definition of landscape. Landscape as a need. Landscape plans. Lighthouse plans. Ecology, economics, and planning. Natural process plans. Social process plans. Visual plans. Implementation. Exercise: Find and describe the types of landscape plans are implemented in the project assignment study areas. Guided field visit. Observations, data collection, and hands-on experience. Context theories and control. The problem. When and how to intervene. Control by zoning. Control by environmental assessment. Design control. What to achieve by intervention. Theories of context: picturesque, genius loci, modernism, design with nature, critical regionalism, linguistic aestheticism, deconstruction, pattern language. GIS and context. Exercise: Simulate a development project in the project assignment study area. Stakeholder engagement in planning. Role of stakeholder engagement in landscape planning. Techniques for effective engagement: participatory mapping and consensus building. Case studies and best practices. Analysing successful mountain landscape planning initiatives. Exercise: Assessing the development project in view of the context theories and of the landscape values and restrictions. Final day: Project work presentation.
Teaching format	Frontal lectures, exercises, projects, site visits. Topics of particular importance or relevance will sometimes be addressed from an interdisciplinary perspective, with the collaboration of other instructors and contributions from those working in the professional world. The active participation of students through questions, suggestions, and critiques is particularly encouraged.

Assessment	**Module 1**: The assessment will be carried out through i) written reports (student assignments) and ii) oral exam/presentation. **Module2**: Written and project work: written exam with review questions and oral project report done in groups. Students who cannot attend classes might also prefer to take the written exam in one solution, with more review questions.

Assessment language	English
Evaluation criteria and criteria for awarding marks	The final grade for the entire course will be calculated as the **average** of the final grades obtained in the **two modules.** **Module 1:** The mark for Module 1 will be assigned based on written home assignments (50%) and on an oral exam/presentation (50%). The positive evaluation of student assignments is a pre-requisite to do the oral/practical exam. Criteria for the evaluation of the student assignments: completeness, clarity, and correctness of reported results Criteria for the evaluation of the oral/practical exam: correctness and clarity of answers/results and correctness and clarity of the methodological approach. **Module 2:** Assessment 1: oral project report (30%) Assessment 2: written exam (70%) Relevant for assessment 1: ability to work in a team, creativity, skills in critical thinking, ability to summarize in own words. Relevant for assessment 2: clarity of answers, mastery of technical language, ability to summarize, evaluate, and establish relationships between topics. For students who prefer to take only one written exam its weight is 100%.

Required readings	Slides, materials, publications, and other readings that will be provided by the professor.
Supplementary readings	• Turner T. (1998) Landscape planning and environmental impact design. 2nd edition. Routledge, Abingdon. • Lloyd, C. (2010): Spatial data analyses. An introduction for GIS users. Oxford University Press. • Lang, S.; Blaschke, T. (2007): Landschaftsanalyse mit GIS. Utb; Ulmer. • Campbell, J. B. (2011): Introduction to Remote Sensing. The Guilford press.