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	1
Year	*I*
Academic year	2021/2022
Credits	6
Modular	*yes*

Total lecturing hours	40 (20 + 20)
Total lab hours	-
Total exercise hours	20 (10 + 10)
Attendance	Recommended
Prerequisites	Familiarity with IT-Systems
Course page	https://www.unibz.it/en/faculties/sciencetechnology/master-environmental-management-mountain-areas/course-offering/

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. The module aims at introducing the rapidly growing field of Geomatics, that 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. The Landscape Planning module aims at providing theoretical insights and operational skills in spatial planning, with a particular focus on ecological and environmental protection issues and on the use of spatial information to support planning processes. 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 ecological planning; 6) skills in collecting and interpreting relevant information to inform planning processes 7) the ability to apply key methods to support planning processes (eg land suitability analysis); 7) hands-on experience with case studies in mountain areas.

Module 1	**Geomatics**
Lecturer	Dr. Egarter-Vigl Lukas
Scientific sector of the lecturer	
Teaching language	English
Office hours	From Monday to Friday on appointment
Teaching assistant *(if any)*	Tscholl Simon
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 at a dedicated sharepoint site.

Module 2	**Landscape Planning**
Lecturer	Dr. Geneletti Davide
Scientific sector of the lecturer	ICAR/20
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. Principles of landscape planning and ecological planning; 2. Inventory of the biophysical and sociocultural environment; 3. Stakeholder engagement techniques; 4. Setting planning goals and developing strategies; 5. Land suitability analysis; 6. Designing and comparing planning options; 7. Case studies for different sectors and spatial scales

Teaching format	Lectures are combined with presentation and discussion of case studies and short assignments, using problem-based learning techniques. Presentations, reading material and links to additional resources will be made available on the Reserve collection.

Learning outcomes	**Knowledge and understanding** of i) basic and applied concepts in Landscape Planning and GIS; ii) usefulness of different tools and techniques to support planning and GIS processes; **Applying knowledge and understanding** to i) proposing solutions to landscape planning problems by generating and comparing possible alternative strategies ii) Be able to apply state of the art GIS software packages on key environmental datasets. **Making judgements** on the most suitable approaches, methodologies and workflows to address a broad range of problems in GIS and landscape planning, and on the datasets required to perform the analysis. **Communication skills** to present basic concepts and case study applications related to GIS and ecological and landscape planning to both a technical and non-technical audience clearly, concisely and using adequate technical terminology. **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

Assessment	The assessment will be carried out through i) written reports (student assignments) and ii) oral exam;
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. The mark for Module 1 will be assigned based on written home assignments (50%) and on an oral/practical exam (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. The mark for Module 2 will be assigned based on a group "case study" report (70%) and an oral exam (30%). The assessment criteria for the written reports include: soundness of the proposed approach; clarity and conciseness of the text; capability to refer to relevant literature; critical thinking; mastery of the technical language. Criteria for the evaluation of the oral exam: correctness and clarity of answers and mastery of the technical language.

Required readings	• 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. • Scientific papers, technical documents and case study material provided in class
Supplementary readings	• Steiner F., The living landscape- An ecological approach to landscape planning. Second Edition. Island Press, 2008. • Additional scientific papers and case study material suggested in class