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	/
Academic year	2017/2018
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://next.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 Geomatics module aims to introduce concepts and components of geographic information systems (GIS), as well as principles of remote sensing (RS). Furthermore, essential skills for spatial data handling, analysis and image interpretation needed in environmental management will be covered. In a practical part, students will deepen their knowledge by applying GIS techniques on spatial datasets. The Landscape Planning module aims at providing theoretical insights and operational skills in landscape planning, with particular emphasis on the use of environmental information to support planning processes in mountain regions. 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 principles of landscape and ecological planning; 6) operational skills in applying key techniques and tools such as multicriteria analysis and GIS to support planning processes; 7) hands-on experience with case studies in different sectors.

Module 1	**Geomatics**
Lecturer	Lukas Egarter Vigl*, EURAC - Drususallee 1, Room: HG007, email: lukas.egarter@eurac.edu, tel.: 0471-055303*
Scientific sector of the lecturer	GEO/04
Teaching language	English
Office hours	From Monday to Friday on appointment
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 analysis (vector/raster) 4. Spatial data management 5. Visualization of spatial data and map creation 6. Introduction to basic concepts and techniques of remote sensing
Teaching format	Frontal lectures and exercises on the computer. PPP will be available at the FUB reserve collection.

Module 2	**Landscape Planning**
Lecturer	Davide Geneletti*, University of Trento, email davide.geneletti@unitn.it, tel: 0461282685, webpage: http://www.planningfores.com*
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. Multicriteria analysis to compare planning options; 7. Case studies in different sectors, including:

	▪ site selection problems; ▪ protected areas zoning; ▪ ▪ spatial planning in mountain regions.
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 report (student assignments); 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 student assignments (30%) and on an oral/practical exam (70%).

	The positive evaluation of student assignments is a pre-requisite to do the oral/practical exam. Criteria for the evaluation of the student assignments: correctness of the results, methods used in the solution, quality of documentation/report. 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 written report (80%) and an individual oral exam (20%). The assessment criteria for the written report include: soundness of the proposed approach; clarity and conciseness of the text; capability to refer to relevant literature; 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.

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	• Additional scientific papers and case study material provided in class