"GIS for landscape analysis''

Basic data of the subject	
Academic Unit:	**Life and Environmental Sciences Faculty**
Course title:	**GIS for landscape analysis**
Program:	**Forestry and Environmental Sciences**
Level:	**Bachelor**
Course status:	**Compulsory**
Study year:	**III, first semester**
Number of hours per week:	**3+2**
Credit value – ECTS:	**6**
Time / location:	**Saturday, L:10:$\frac{00}{}$ -12:$\frac{15}{}$ Salla: 518; U: 12:$\frac{30}{}$ -14:$\frac{00}{}$ LabIT/GIS**
Lecturer:	**Prof. Asoc. Dr. Ferim Gashi**
Contact details:	**ferim.gashi@uni-pr.edu**
Course description:	The course will be divided into two parts. In the lecture part, concepts and components of geographic information systems (GIS) will be covered as well as the principles of remote sensing (RS) for earth observation purposes. Furthermore, all essential skills for spatial data handling, analysis and image interpretation needed in landscape ecology will be discussed. In the practical part, students will elaborate their own project by applying GIS and RS techniques on spatial datasets.
Course objectives:	The course aims at the knowledge of the Introduction to GIS concepts and techniques, projections and geographical reference systems, spatial data analysis (vector/raster), spatial data management, visualization of spatial data and map creation, introduction to basic concepts and techniques of RS, physical principles of the electromagnetic spectrum, RS platforms and sensors, image data acquisition, processing and analysis, GIS and remote sensing applications in environmental sciences.
Learning outcomes:	The successful completion of this course will enable students to: 1. understand the fundamental concepts of a GIS including spatial data models, spatial analysis and cartographic principles for landscape ecological questions 2. manipulate and manage large spatial datasets adequately 3. apply state of the art GIS software packages on environmental datasets 4. have an insight into RS concepts and techniques for environmental purposes 5. understand the information content of remotely sensed data know to retrieve information's from it 6. analyze and critically question methods and results

Contribution on student load (must correspond with learning outcomes)			
Activity	**Hours**	**Days/week**	**Total**
Lectures	3	15	45
Exercise theoretical/laboratory	2	15	30
Practice work	1	5	5
Contact with lecturer/consultations	1	15	15
Field exercises	1	15	15
Mid-terms, seminars	1	-	1
Homework	-	-	-
Individual time spent studying (at the library or home)	1	15	15
Final preparation for the exam	1	15	15
Time spent in evaluation (tests, quiz, final exam)	1	5	5
Projects, presentations, etc.	4	-	4
Total			**150 hours (6 ECTS)**
Teaching methods :	In the lecture part, the topics are presented by the lecture while the practical part is dedicated to the students involvement and will be based on a hands – on approach. Generally, Power Point presentations will be available in the course reserve collection database of the Faculty. Additional material will eventually be provided by the lecture. In part of the exercises, the ArcGIS program will be used. Any additional material will be provided by the professor.		
Evaluation methods:	Attendance and engagement in lectures and exercises 10%; Colloquiums 30%; Seminar project 20%; Final Exam 40%.		
Literature			
Basic Literature:	• Gashi, F., Nikolli, P., Meha, M., (2016): Sistemet e informacionit gjeografik. Libri shkollor, Prishtinë. • Nikolli, P (2009): Përfitimi dhe përpunimi i imazheve satelitore. Shulu, Tirane.		
Additional Literature:	• Gorr, W. and Kurland, K. GIS Tutorial, 6th edition, ESRI Press, 2016 • Nikolli, P (2013): Krijimi i hartave tematike me anën e ARCGIS ESRI, Tirane.		

Designed study plan:		
Week	**Lectures**	**Exercises**
First week:	Notification of students with the course syllabus and the manner of its realization	General knowledge on ArcGIS

Second week:	General Information on GIS	Knowledge of geospatial data models
Third week:	Modeling of GIS data	Spatial modeling. GIS/Integrated Modeling
Fourth week:	Its generalizations and forms	Georeferencing Systems
Fifth week:	Database models	Vector Based Model
Sixth week:	Database models	Raster Based Model
Seventh week:	Colloquium I	Field exercises
Eighth week:	GIS Outputs	Geoprocessing
Ninth week:	File Geodatabases	Digitizing
Tenth week:	SpatialData	Geocoding
Eleventh week:	Geoprocessing	Geoprocessing, Model evaluation
Twelfth week:	3DGIS	3D Data Visualization and Modeling
Thirteenth week:	Spatial model and interpolation	Spatial model and interpolation
Fourteenth week:	Spatial analysis	The Buffer method
Fifteenth week:	Colloquium I	Presentation of seminar papers by students
Academic policies and rules of conduct:		
Students are obliged to attend regular lectures, participate in field visits (excursion). Disconnection of mobile phones, timely access to the classroom and keeping quiet in the lesson are also mandatory.		