Università degli Studi della Basilicata
Scuola di Ingegneria

COURSE: GIS and Environmental Modelling			
ACADEMIC YEAR: 2019/20			
TYPE OF EDUCATIONAL ACTIVITY: Characteristic			
TEACHER: Aurelia Sole			
e-mail: aurelia.sole@unibas.it		web: http://docenti.unibas.it/site/home/docente.html?m=000440	
phone: 0971 202473		mobile (optional):	
Language: Italian or English if are present foreign students			
ECTS: (lessons e tutorials/practice) 9	n. of hours: (lessons e tutorials/practice) 81	Campus: Potenza School of Engineering Magistral Course of Environmental and Territorial Engineering	Semester: I

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Knowing the cartographic data, with particular reference to the Italian cartography, know the basic concepts of geographic projection systems, relevant for the proper geo-referencing of the data territorial; know the principles of global positioning system (GPS) and their applications; acquire data from regional authorities in different formats and georeferencing according to the coding required; perform editing and verification of data quality; make data available in a computerized structure according to predetermined specifications from the implementation of a GIS; make the documentation as a standard generation metadata, according to INSPIRE EU Directive, perform operations on spatial data in order to obtain information made starting from simple structures, -generate digital terrain models with various methods, starting from elevation databases from different sources, data acquisition and remote interfacing with the SIT, -prepare the data for the simulation models through interpretation of environmental dynamics, -generate thematic maps according to the required specifications

PRE-REQUIREMENTS

Computer use and file management, word processing, spreadsheet; basic concepts of information technology; presentation tools; computer networks

SYLLABUS

Introduction to Geographic Information Systems; Geo-database and digital representation; Model of data; sources of data, data acquisition, interchange formats; problems of verification, documentation and data quality; INSPIRE Directive; correction and updating of data; Space Operations of vector data; space operations on raster data: Map algebra; Digital Terrain Models (Grid and TIN); Information derivable from a digital terrain model; Environmental models, distributed models; Integration of GIS and models (rainfall- runoff models, models for the study of diffuse pollution, erosion models, models of flood vulnerability models of an area etc..).
The course will be conducted in the GIS laboratory of the Engineering School, exercises with the use of GIS software and the application of one or more of these models.

TEACHING METHODS

Theoretical lessons, Laboratory tutorials, Project works,.

EVALUATION METHODS

The practical test consists of a simulation, using the GIS software used during the course, with the aim of assessing whether the student has acquired the skills and skills required. The time required for the test is 2 hours;
The written test aims to verify the theoretical skills, follows the practical test and lasts one hour.
The overall grade is given by the results of the written test, the practical test and the material related to the design laboratory carried out during the course.
If one of the 2 tests is insufficient or if the total score is less than 18 it is necessary to repeat the tests

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Principles of Geographical Information Systems (Spatial Information Systems) P. A. Burrough, R. A. McDonnell, Geographical Information Systems in Hydrology a cura di V. P. Singh e M. Fiorentino, Kluwer Academic Publishers. Lecture notes, user manual of software QGIS, GRASS

Course notes available online, manuals and materials related to the software used QGIS, GRASS.

The data of the tutorials and the online materials are shared through a cloud to which all students of the academic year are enrolled. of reference; https://elearning.unibas.it/enrol/index.php?id=91.

INTERACTION WITH STUDENTS

At the beginning of the course, after having described objectives, program and methods of verification, the teacher makes available to the students the didactic material through a shared folder. At the same time, the list of students wishing to enroll in the course is provided, accompanied by name, surname, matriculation number and email address.
Office hours: at the end of the lessons, the teacher stays in the classroom for the students reception.
In addition to the weekly reception, the teacher is available at any time for a contact with the students, through their e-mail or on the e-learning site https://elearning.unibas.it/enrol/index.php?id=91

EXAMINATION SESSIONS (FORECAST)[1]

An exam date will be set each month. In the periods of interruption of lessons there will be two exsam session 12/02/2020, 27/02/2018, 24/06/2020, 08/07/2020, 22/07/2020, 16/09/2020, 30/09/2020

SEMINARS BY EXTERNAL EXPERTS YES X NO □

FURTHER INFORMATION

[1] Subject to possible changes: check the web site of the Teacher or the Department/School for updates.