LOGO DELLA STRUTTURA PRIMARIA

COURSE: Geographic Information System and Environmental Modelling			
ACADEMIC YEAR: 2016/17			
TYPE OF EDUCATIONAL ACTIVITY: Characterizing			
TEACHER: Aurelia Sole			
e-mail: aurelia.sole@unibas.it		website:	
phone: +39 0971202473		mobile (optional):	
Language: Italian or English if there are international students			
ECTS: 9 6 lessons 3 tutorials/practice	n. of hours: 72	Campus: Potenza School of Engineering Master Degree Environmental 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

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,
The course includes 72 hours of teaching (lessons and exercises). In particular 54 hours of lectures and 18 hours of guided exercises in the laboratory.
For the project work, students are divided into groups (maximum 3 students for group); for the exercises will be used open source software; students can work on their PC. (Students who do not have their own PC can use a computer available of the course).

EVALUATION METHODS

Written examination, Practical test.
The practical test consists of a simulation, using GIS software used during the course, in order to assess whether the student has acquired the skills and abilities required. The estimated time for the test is 2 hours;
The written test is aimed at verifying the theoretical skills, follows the practice test and lasts one hour.
The overall grade is given by the results of the written test, practice test and the project work materials made during the course.
If one of the two trials 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 note, manuals and materials related to software used QGIS, GRASS.. The data of material, tutorials are

shared through the University Moodle online platform to which all the students will be connected.
(https://elearning.unibas.it/enrol/index.php?id=91)

INTERACTION WITH STUDENTS

At the beginning of the course, after describing the objectives, program and methods of verification, the teacher provides students educational materials through a shared folder. Simultaneously, it collects a list of students who intend to enroll in the course, together with name, serial number and email.

Students will be, also, enrolled in the University Moodle platform - where it's possible to communicate through blog.

Office hours: after lessons, the teacher remains in the classroom for students.

(https://elearning.unibas.it/enrol/index.php?id=91)

In addition to weekly reception, the teacher is available at all times for a contact with the students, through their e-mail.

EXAMINATION SESSIONS (FORECAST)[1]

13/02/2018, 27/02/2018, 23/04/2018, 22/05/2018, 19/06/2018, 18/07/2018, 18/09/2018, 30/10/2018, 04/12/2018

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.