UNIVERSITÀ DEGLI STUDI DI PADOVA
Forest Science & Sustainable Agriculture

GIS for Agro-Environmental Studies (4 CFU)

A.A. 2017/2018

Course Introduction

Minimal Terminology

Exam

Course introduction

The "Introduction to GIS"/"GIS for Agro-Environmental Studies" courses are a pass/no pass course.

First half of the course will cover practical tutorials to familiarize with geographic information systems (GIS) and hands-on learning of a GIS software. The track of the tutorials is the one found in http://www.qgistutorials.com/en/ up to (not including) "Advanced GIS operations".

For each lecture you will find track of what was covered in the LECTURE LOG section of the moodle (https://elearning.unipd.it/scuolaamv/course/view.php?id=1954#section-3). Lecture logs will also include info on the coming lecture, so that students can download the datasets and prepare.

Minimal terminology and tasks

The following **minimal terminology** has to be understood to pass the course:
- Vector model
- Raster model
- DTM/DSM/DEM models
- The following **vector** formats: shapefile (check http://gdal.org/ogr_formats.html)
- The following **raster** formats: GeoTiff (check http://gdal.org/formats_list.html)
- Load vector data from TEXT files
- What are the following **geodatabases** and what are online mapping services
  - PostgreSQL/PostGIS
  - Oracle Spatial
  - Open Geospatial Consortium services – WFS, WMS, WCS.
- Slope – aspect (derived from DTM processing)
- **Geo-processing** of vector datasets
  - Buffer procedure
  - Union, Merge, Clip
  - Spatial Join
  - Spatial operators to query vector elements
    - Intersects, Overlaps, Within, Touches
- Operators to operate on **table data** of vector elements
  - Join/link tables using a key field
  - ILIKE / LIKE
  - Equal to / not equal to
  - Less than /greater than
- **Raster calculator**
- ~~**Coordinate reference systems**~~
  - ~~Projected~~
    - ~~UTM-WGS84 (EPSG 326xx) for Italy EPSG 32632 and 32633~~
    - ~~For Italy only: Gauss Boaga - Roma Monte Mario (EPSG 3003 or EPSG 3004)~~

- ~~Geographic (longitude and latitude angular coordinates)~~
  - ~~WGS84 (EPSG 4326)~~

You will then learn to use GIS software to analyze real data to extract information, estimate variables of interest and support decisions (e.g. for planning, problem-solving etc.).

Examination

To pass the 4 CFU course you are expected to hand-in lab project report.

The **lab project** consists in developing your idea for solving a problem / testing an hypothesis using GIS software. The following material in the Moodle platform is directly useful for the project:

- **template lab project** – a template on format of the project report
- **handout - access geodata** – a guide on how to access raster/vector datasets in the web

Once you finish your project report, the student will upload the DOC or PDF file in the moodle link - **HAND-IN LAB PROJECT** for assessment.

If not sufficient for passing, the student will get feedback for improvements and will be allowed a second chance to hand-in an improved version.

Once you have a positive feedback you can formalize the success in the course by registering to the official exam dates in UniWEB (www.uniweb.unipd.it).