



GEOG2151 Geographical information systems

[30h+30h exercises] 5 credits

Teacher(s): Mark Rounsevell
Language: English
Level: Second cycle

Aims

Knowledge :

To develop an understanding of the basic principles and functions of a GIS including, the acquisition, storage and manipulation of spatial data, spatial analysis techniques, and GIS design and presentation.

Skills :

To develop skills in the use of the ARCGIS GIS software

To be able to present and analyse spatial data within the framework of a GIS.

Main themes

Prerequisites :

GEOG1150 - Cartography

Theory:

Theoretical course 1 Introduction

An introduction to the course objectives and content and an overview of the basic principles of GIS

Student implication : 1 hour

Theoretical course 2 Data models and simple queries

Data models and simple queries - raster and vector data models, attribute tables, data query and observation

Student implication : 1 hour

Theoretical course 3 Basic spatial analysis

Basic spatial analysis - measurement of map objects (length, distance, shape and areas), classification and reclassification (line dissolve, neighbourhood functions, filters, buffers), spatial overlay (comparing coverage variables), spatial arrangement (pattern analysis, direction, connectivity), statistical surfaces (DTM, interpolation).

Student implication : 5 hours

Theoretical course 4 Data acquisition, input and editing

Data acquisition, input and editing - data sources and their input (digitising, websites, GPS, copyright and confidentiality issues), Data editing (raster-vector conversions, joining adjacent coverages, errors in GIS data)

Student implication : 2 hours

Theoretical course 5 GIS modelling

Land evaluation and risk assessment, neighbourhood models, limitations of GIS.

Student implication : 1 hour

Theoretical course 6 Case studies

Specific case study examples demonstrating GIS applications for research projects

Student implication : 2 hours

Total : 12 hours

Practical sessions :

TD 1 Introduction and review of ARCVIEW - Student implication : 3 hours

TD 2 Simple attribute data manipulation - Student implication : 3 hours

TD 3 Basic spatial analysis - Student implication : 12 hours

TD 4 Data acquisition, input and editing - Student implication : 9 hours

TD 5 Examples of GIS modelling - Student implication : 3 hours

TD 6 Student seminars - Student implication : 3 hours

Total : 33 hours

Seminar

Presentation of results from the student personal assignments (in English ?)

Personnal work:

A personal assignment based on the development and use of a GIS - estimated time of work = 15 hours.

The personal assignment will be an opportunity for each student to develop their own GIS from data input and editing through to spatial analysis and presentation of the outputs. The study will be based on a specified region using, in part, data collected during the practical sessions, which will be used to address a range of specific problems or issues for the area that can be tackled with GIS.

Other credits in programs

GEOG21	Première licence en sciences géographiques	(5 credits)	Mandatory
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