GEOG2151 Geographical information systems

[30h+30h exercices] 5 crédits

Enseignant(s): Mark Rounsevell
Langue d'enseignement : anglais
Niveau : Second cycle

Objectifs (en termes de compétences)

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.
Know-how :
To develop skills in the use of the ARCVIEW GIS software and Spatial Analyst extension.
To be able to present and analyse spatial data within the framework of a GIS.

Objet de l'activité (principaux thèmes à aborder)

Prérequis :
GEOG1150 - Cartographie
Cours magistraux :
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
Travaux dirigés :
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 ?)
Travaux personnels :
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.
Notions acqu

Autres crédits de l'activité dans les programmes

GEOG21	Première licence en sciences géographiques	(5 crédits)	Obligatoire