Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

SLUkurs

Syllabus

PNG0028 Geographic Information Systems and Geographic Analysis, 10.0 credits

Syllabus approved

2010-08-11

Subjects

Biometry

Education cycle

Third cycle

Grading scale

Pass / Failed
The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

Language

English

Prior knowledge

At least bachelors degree within any discipline that deals with geographic data, whether it is physically, culturally or socially oriented. No previous explicit GIS studies are required.

Objective, including learning outcomes

After completed course, the students will be able to:
- master the ArcGIS software at ArcInfo level
- apply basic GIS principles of geographic representation, geodesy, data capture, database design, and cartography for producing maps and map-like presentations
- creating, editing, and managing geo-databases
- apply 2D and 3D spatial analysis to vectorised as well as rasterised geographic information
- utilise the Visual Basic programming language for automation of GIS workflow
- utilise ArcGIS ModelBuilder for automation and documentation of GIS workflow
- practically design and implement projects of geographic analysis and/or map production
- effectively present practically performed projects of geographic analysis and/or map production

Content

While starting at the basic level, the course advances the usage of geographical information systems (GIS) as a tool for planning, implementing, and presenting projects of spatial dimensions no matter their disciplinary residence. The course sets out from systems and processes that may be referenced to the earth, to provide a platform for assessment of interdisciplinary systems and processes. The course is constituted by the six consecutive modules:
1. Learning the ArcGIS desktop software
2. Understanding Geographic Data; Understanding Map Projections and Coordinate Systems; Turning Data into Information using ArcGIS 9; Cartographic Design Using ArcGIS 9.
3. Working with Rasters in ArcGIS Desktop; Learning ArcGIS Spatial Analyst; Learning ArcGIS 3D Analyst.
4. Learning Visual Basic for Applications (VBA) for New ArcGIS Developers.
5. Geo-processing with ArcGIS Desktop.
6. Creating and Editing Labels and Annotation; Geo-coding with ArcGIS Desktop; Creating, Editing and Managing Geo-databases for ArcGIS Desktop; Creating and Editing Geo-database Topology with ArcGIS Desktop.

Requirements for examination

Written presentation as well as oral presentation and opposition of GIS project. The course will be examined with marking scale Passed or Failed.

Additional information

The course will be given at self-study basis, where coordination and administration will be delegated into the hands of the course participants themselves. The training programme will utilise a series of comprehensive web-based tutorials in combination with seven (including introduction) workshops to be circulated among the participants. With a student's copy of ArcGIS installed at a suitable machine, studies may be performed anywhere, leaving workshops as a forum for synergetic interaction with fellow participants. In order to support continuous interaction in-between workshop occasions, a web-based Fronter workspace will also be set up. In practice, the Fronter workspace will constitute the backbone of educational communication throughout the course.
Each of the topics listed under Course content (topics separated with semicolons) will be covered with a separate web-based tutorial, where the first will be open for studies at the introductory workshop occasion. With a total of fourteen tutorials constituting the course, approximately nine months will be required for the entire series. With each of the educational modules (1 – 6 above) being subject for a summary workshop, a total of seven workshops is required through a period of nine months.
In parallel with executing web-based tutorials and workshops, course participants are required to execute some GIS project of their own, and to use the workshop series as a forum for advancing their associated projects in collaboration with workshop fellows. In lack of a suitable project, course administration will provide the necessary materials.

Responsible department

Department of Energy and Technology