AG2422 Spatial Planning with GIS 7.5 credits

Spatial Planning with GIS

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for AG2422 valid from Spring 2011

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Built Environment

Specific prerequisites

A completed Bachelor of Science in Engineering or 180 credits academic studies in the field of Technical Science, Environmental Science, or planning and documented proficiency in English corresponding to English B.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

Methods from geographical information science can be used in various ways in Spatial planning. The aim of the course is to give knowledge about the methods from GIS that are most important to spatial planners. Furthermore the course will give knowledge about how geographical information systems are used within various fields of spatial planning.

Course contents

The course covers the following topics within geographical information science:

- Geographical Visualization – How to design maps and visualize three dimensional geographical data models.
- Interpolation methods – In Spatial planning several different kinds of data need to be analyzed, e.g. statistics, environmental data, topographic data etc. Some of these data have a spatial component but are not stored as geographical data. Statistics may have a relation to address. Pollution of soils may be related to a certain point where the measurement was made. This course will give you insights into different ways of interpolation that can be used to create geographical data. These data can then be used in a GIS to perform spatial analysis.
- Multi Criteria Evaluation, MCE – In a spatial planning problem, such as finding the best route for an oil pipeline, we often have to consider a large number of different criteria associated with different data sources. MCE is a decision support tool that is used to combine the different criteria into a suggestion for a solution.
- Error propagation – When solving a spatial planning problem data of different quality are combined and analyzed to reach a solution. The errors in the source data propagate through the analysis made in the GIS. Different methods to verify the validity of a results from GIS analysis will be described.
- Modeling and analysis of networks – Networks are mainly used in traffic planning but also in utilities management. Here we will focus on algorithms and models used in traffic planning
- Spatial statistics – An introduction to different methods in spatial statistical analysis that are relevant to spatial planning.
- Analysis tools - The course will cover the use of various analysis tools in GIS such as map algebra, buffering, overlay, queries etc.

Furthermore the course will show how GIS is used within the fields of: local planning, regional planning, environmental planning and transportation planning. Rather than giving a comprehensive overview of how GIS is used in each field different examples will illustrate how GIS can be used to solve different tasks in spatial planning.

The exercises will give hands on experience in using vector (Arcview) and raster (Idrisi) based GIS to solve problems in spatial planning.

Disposition

Lectures 20h
Laboration 40h

Course literature

Will be announced at the course start

Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- PRO1 - Project, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

Written exam (TEN2, 3 cr)
Approved laboratory reports (LAB2, 3 cr)
Project (PRO1; 1,5 cr)

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.