AG1314 GIS and Surveying 7.5 credits

GIS och mätningsteknik

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

Establishment

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Mathematics E/Mathematics 4/Mathematics Continuation – level 2 and Physics 2/ Physics level 2. Basic computer skills are recommended.

Intended learning outcomes

The student should be able to show knowledge and skills in basic methods for collection of geographic data for production and presentation of maps as well as for the solution of simple geographic analyses using GIS software.
After completing the course the students shall be able to

- account for how different types of reference systems are built-up and how they can be used
- use geodetic measuring instruments (Total station, GNSS and levelling instruments) to collect data for updating maps, positioning and precise height determination.
- evaluate different data sources and account for different data collection methods within Geographic IT
- analyse geographic data and present the results in the form of thematic maps
- solve localization problems by means of GIS
- create and update maps based on data acquired from different sources
- design questions to a database by means of "Structured Query Language"
- use of and be able to evaluate crowd-sourced geodata and the open source GIS solutions
- describe the use and the benefits of GIS in society and its role for sustainable development

Course contents

The course consists of lectures, practical filed measurements, computer exercises and a project work.
Main contents of lectures:
- Reference systems and map projections
- Principles of the most common data collection techniques: photogrammetry, laser scanning, GNSS and total station
- Measurement with GPS, total station and levelling instrument.
- Basic methods for the analysis of geographic data
- Structure and use of geographic database
- Map production work flow
Main contents of laboratory sessions (designed as group work)
- practical collection of data by means of GNSS, total station and levelling instrument
- map production with using special software
- Location analysis by means of GIS software
- analysis of raster and vector data

Examination

- TENA - Written examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LABA - Laboratory Work, 4.5 credits, grading scale: P, 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.

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

Other requirements for final grade

Passed written examination (TENA; 3 credits), approved laboratory sessions (LABA; 4,5 credits) and presence in all guest lectures and in the field exercises.

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.