# AG2425 Spatial Databases 7.5 credits

## Rumsliga databaser

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 AG2425 valid from Autumn 2010

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

## Specific prerequisites

A Bachelor's degree in surveying engineering (geoinformatics, GIS, cartography, photogrammetry, remote sensing, geodesy) or in relevant science and engineering fields, for example: civil engineering in the built environment or equivalent, urban, transport or regional planning, environmental sciences, geography, etc. including courses corresponding to a minimum of 30 ECTS credits in the field of geoinformatics, GIS, cartography, photogrammetry, remote sensing, geography, urban, transport or regional planning or environmental sciences.
In addition ** documented proficiency in English B or equivalent (TOEFL, IELTS e g).

Furthermore, AG2411 GIS Architecture and Algorithms or equivalent; and C/C++ and Java programming skill

## Language of instruction

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

## Intended learning outcomes

The goals of this course are to enable students to develop a good understanding of the principles and techniques of relational database design as they apply to spatial databases; apply these principles and techniques in designing and building spatial databases; and use spatial databases to perform common types of queries and spatial analyses.

## Course contents

- Logical geographic data models for spatial databases, including vector and raster model
- Physical data storage, data access method, query processing and optimization
- Design conceptual data models for spatial databases using a ER diagram approach
- Process and retrieve geographic data from spatial databases using OGIS/SQL1999 interface and other specific interface (SDK) from database vendors
- Optimize your spatial database by applying spatial indexing technologies, pyramid structure, data compressing, etc
- Basic operations of the Oracle Spatial databases and PostGIS/PostgreSQL open-source spatial database
- Introduction to modern commercial and open-source (free) spatial databases products, e.g. Oracle 10g Spatial, ArcSDE 9.x, PostGIS 1.3/PostgreSQL 8.2, etc.
- Advantage and trends in spatial databases: network data model, spatio-temporal data model, spatial data mining, etc
- Guest lectures on applications of spatial databases

This course includes lectures, laboratory exercises and a project.

## Disposition

Lectures 20h
Laboration 20h
Written exam

## Course literature

The course literature will be posted on the course'e homepage at least four weeks before the course starts.

## Examination

- LAB2 - Laboratory Work, 3.0 credits, grading scale: P, F
- PRO1 - Project, 1.5 credits, grading scale: P, F
- TEN2 - Written examination, 3.0 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 examination (TENA; 3,0 cr)
Project Work (PRO1; 1,5 cr)
Laboratory Work (LABA; 3,0 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.