

## GISU06, GIS: Geographical Databases, 7.5 credits

*GIS: Geografiska databaser, 7,5 högskolepoäng*

Second Cycle / Avancerad nivå

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### Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2020-01-23 to be valid from 2020-01-23, spring semester 2020.

### General Information

The course is offered as a commissioned education.

The course is an elective course for second-cycle studies for a Degree of Master of Science (120 credits) in geographic information science.

*Language of instruction:* English

*Main field of studies*

Physical Geography

Geomatics

*Depth of study relative to the degree requirements*

A1N, Second cycle, has only first-cycle course/s as entry requirements

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### Learning outcomes

The course intends to provide advanced knowledge about geographic databases where the student should understand the full process from requirements specification to completed database.

### Knowledge and understanding

On completion of the course, the student should be able to:

- describe the process of structuring a database, how to proceed from specification via a conceptual model to a database scheme,
- account for advantages and disadvantages to store geographic data in databases compared to a file system,

- describe how geographic data can be stored in a database and how an expanded SQL language can be used to search for geographic data
- explain object-oriented concepts as object class, methods, attributes, inheritance, associations, etc.,
- account for methods for spatial indexing and
- give examples of geographic databases that are available for free and evaluate the quality of these.

### **Competence and skills**

On completion of the course, the student should be able to:

- independently create a conceptual model (class diagram) in the modelling language UML (unified modeling language) from a specification, independently create a database scheme in a GIS program from a conceptual model
- handle the query language SQL to create tables, insert data and search after data in a relational database and also make spatial searches in a spatial database.

### **Judgement and approach**

On completion of the course, the student should be able to:

- evaluate the work load and the complexity to create and maintain a geographic database.

### **Course content**

The course consists of six subparts:

- Conceptual modelling in UML
- Databases and SQL
- Spatial databases
- Examples of database environments in a GIS program
- Standards and free available geographic databases
- Independent advanced assignments

### **Course design**

The course is a distance course and is distributed on the Internet. It is flexible designed which facilitate for the student to carry out the course on full-, half-, or part-time.

### **Assessment**

Examination takes place through written take-home examination at the end of the course combined with approval of written assignments and independent advanced study projects during the course. For students who have failed the regular examination, additional occasion in close connection to this is offered.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

## **Grades**

Marking scale: Fail, Pass.

To pass the entire course, approved examination, passed written assignments and reports from independent advanced assignments are required.

## **Entry requirements**

General entry requirements including English B and 90 credits including 30 credits GIS.

## **Further information**

The course may not be included in the higher education qualification together with GISN06 Geographic databases, 7.5 credits or NGEN12 Geographical Databases, 7.5 credits.

## Subcourses in GISU06, GIS: Geographical Databases

Applies from H21

2101 Geographical Databases, 7,5 hp  
Grading scale: Fail, Pass

Applies from V20

2001 Geographical Databases, 7,5 hp  
Grading scale: Fail, Pass