

## **NGEA12, Physical Geography: Geographical Information Systems - Advanced Course, 15 credits**

*Naturgeografi: Geografiska informationssystem - fortsättningskurs, 15 högskolepoäng*  
**First Cycle / Grundnivå**

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### **Details of approval**

The syllabus was approved by Study programmes board, Faculty of Science on 2007-03-01 (N2007266) and was last revised on 2013-01-08 (N2007266). The revised syllabus comes into effect 2013-01-08 and is valid from the spring semester 2013.

### **General information**

The course is an elective course for second-cycle studies and is given within the programs for Master's degree (120 credits) in physical geography and ecosystem analysis and Master's degree (120 credits) in geomatics. The course is also given as a freestanding course. The course is given in English.

*Language of instruction:* English

*Main field of study*      *Specialisation*

Physical Geography      G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

### **Learning outcomes**

The aim of the course is to give advanced theoretical and practical knowledge within spatial analysis and geographic information processing.

On completion of the course, the student is expected to be able to:

*Knowledge and understanding*

- explain basic methods and conceptual models of the contents of a geographic database,
- explain the principles of transformation between different geodesic reference systems,
- explain concepts and calculation methods within interpolation and advanced spatial analysis,

- explain basic logic within computer programming and describe how programming can be used with geographic data and problems
- account for the effect of error propagation in geographic modelling
- account for the infrastructure of geographic data in society in general, and describe at a general level which laws that concern the use of geographic data
- illustrate advanced use of GIS in environmental applications and in society in general.

### *Skills and abilities*

- build and handle databases with geographic data of different geometric origin and in different formats,
- transform data between common geodesic reference systems,
- independent and in groups suggest procedure and methods to solve complex geographic issues and to carry out these with GIS,
- present results of GIS analysis orally, in writing and as maps for specialists and in the subject not versed listeners,
- collect knowledge in the area more or less independently.

### *Judgement and approach*

- compile, evaluate and discuss choice of data and analytical method to solve a given geographic problem
- review, evaluate and discuss the reliability of analyses with GIS critically
- describe and evaluate the use of GIS in the society.

## **Course content**

The course contains a number of parts that are based on advanced use of existing software for database development, analysis and presentation of geographic information. The student develops the ability to structure and solve complex problems. A part of own programming is included as training in logical problem-solving and as preparation for higher studies and the working life. A project assignment at the end of the course gives training to work independently with GIS. Applications are chosen from current and relevant physical geography problem areas.

## **Course design**

The teaching consists of lectures, laboratory sessions, field exercises, seminars, group work and project work. Participation in laboratory sessions, field exercises, seminars, group work and project work and thereby integrated other teaching is compulsory.

## **Assessment**

The examination consists of a written examination at the end of the course and of grading of oral and written reports on exercises and project work during the course. For students who have not passed the regular examination, additional examination in close connection to this is offered.

## **Grades**

Grading scale includes the grades: Fail, Pass, Pass with distinction

To pass the entire course, approved examination is required and approved laboratory reports, written assignments, project reports and participation in all compulsory parts. The final grade is determined by summarising the results of all parts that are included in the examination.

## **Entry requirements**

General entry requirements and 75 credits scientific studies including NGEA11 (Geographic information systems- introduction) or the equivalent.

## **Further information**

The course may not be included in a higher education qualification together with:

GISA22 GIS Geographical Information System, Advanced course