



**LUND**  
UNIVERSITY

Faculty of Science

## **GISA21, GIS: Geographical Information Systems - Introduction, 15 credits**

*GIS: Geografiska informationssystem - introduktion, 15  
högskolepoäng*  
First Cycle / Grundnivå

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### **Details of approval**

The syllabus was approved by Study programmes board, Faculty of Science on 2013-03-21 to be valid from 2013-03-22, autumn semester 2013.

### **General Information**

The course is a compulsory course at the basic level for a Master of Science in geographic information science.

*Language of instruction:* English

*Main field of studies*

Geographical Information Science

*Depth of study relative to the degree requirements*

G1N, First cycle, has only upper-secondary level entry requirements

### **Learning outcomes**

The aim of the course is to give basic theoretical and practical knowledge about concepts and methods for treatment and analysis of geographic data with geographic Information systems, (GIS) and an introduction to cartography and geodesy.

*Knowledge and understanding*

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

- Describe different conceptual models of spatial phenomena
- Describe different data models for digital spatial data (raster - vector), and describe how these are stored digitally and their advantages and disadvantages
- Account for basic spatial analysis methods
- Account for basic cartographic methods
- Explain the meaning of different map projections, geodesic reference systems and coordinate systems

- Describe basic structures for relevant databases

### *Skills and ability*

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

- Organise and handle digital geographic data
- Independently carry out basic analyses of geographic data in raster and vector format by means of standard GIS software
- Present procedure and results from collection and analysis of geographic data in writing and as maps for specialists and laymen
- Carry out and present basic statistical evaluations of spatial data
- Use simple database management systems (basic SQL)
- Search for and collect public geographic data

### *Assessment skills and approach*

On completion of the course, the student should:

- Be aware of the importance to use geographic information and analysis within natural sciences and other application fields
- Understand the importance of and have achieved a critical approach to geographic data and analysis results

## **Course content**

The course gives a broad theoretical basis to further work with digital geographic data. Understanding of representation and analysis of spatial elements are emphasised. The course also highlights general geographic problems within environment and society through practical GIS-applications. These treat both Swedish and international conditions and vary in scale from local to regional. The components of GIS-technique that is treated comprise basic cartography, including projections, reference systems, geographic data in digital form (maps, images and tables) and basic analysis of geographic data in raster and vector format and cartographic and graphical presentation of digital maps. In the course, communication training is also included. Specific emphasis is placed on cartographic presentation of digital geographic data.

## **Course design**

This is a distance course distributed via Internet. It is designed to be flexible to make it possible for the student to carry out the course work in a full time (100 %) or part-time (50 % or 25 %) study tempo.

## **Assessment**

Examination takes place through written open book exam at the end of the course combined with passed reports and written assignments during the course. For students who have failed the regular examination, additional occasion in close connection to this is offered.

*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 and passed written assignments are required and reports.

## Entry requirements

For admission to the course, basic university qualification and English B are required

## Further information

The course may not be included in scientific higher education qualification in geographic information science together with:

NGE602 Geographic information systems I, 10p,

NGEN11 Geographic information systems, an introduction, 15 credits

NGE012 GIS and remote sensing in environmental science, 10 p

NGEA05 GIS and remote sensing in environmental science, 15 credits

NGE558 Geographic information systems, introduction, 5 p

NGEA13 Geographic information systems, introduction, 10 credits

NGE559 Geographic information systems, advanced, 5 p

NGEA14 Geographic information systems, advanced, 10 credits

GIS401 Geographic information systems, introduction, 6.7 p

GISA01 Geographic information systems, introduction, 10 credits

GIS502 Geographic information systems, advanced, 6.7 p

GISA02 Geographic information systems, advanced, 10 credits

SGE501 Geographic information systems, 1-20 p

SGEG11 Geographic information systems (GIS) with broad application, 30 credits

SGE502 Geographic information systems, 1-10 p

SGEG01 Geographic information systems (GIS), broad introduction with exercises, 15 credits

GEG451 Geographic information processing, 20 p

VFT032 GIS and landscape processes, 5 p

TEK270 Geomatics AK 13.7 p

or other course with equivalent contents

Subcourses in GISA21, GIS: Geographical Information Systems -  
Introduction

Applies from V13

1301 Geographical Information Systems - Introduction, 15,0 hp  
Grading scale: Fail, Pass