



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Geografisk informationsteknik - introduktion Geographic Information Technology - Introduction

EXTG20, 15 credits, G2 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED L

Date of Decision: 2023-04-20

General Information

Main field: Disaster Risk Management and Climate Change Adaptation.

Elective for: MKAT2, R4

Language of instruction: The course will be given in English

Aim

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.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- 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

Competences and skills

For a passing grade the student must

- 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)

Judgement and approach

For a passing grade the student must

- 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

Contents

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. 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.

Examination details

Grading scale: UG - (U,G) - (Fail, Pass)

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.

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.

Admission

Admission requirements:

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

The number of participants is limited to: No

Selection: Students at the Masterprogram Disaster Risk Management and Climate Change Adaptation are guaranteed admission.

The course overlaps following course/s: EXTG30, NGEA11, GISA21

Reading list

- INES: Exercise descriptions.
- Harrie L. (red.): Geografisk informationsbehandling - teori, metoder och tillämpningar, 67:upplagan. Studentlitteratur, 2020, ISBN: 9789144088778.
- Kang-Tsung Chang: Introduction to Geographic Information Systems. 2014, ISBN: 9781259010613. Later editions also works fine.

Contact and other information

Course administrator: Karin Larsson, karin.larsson@nateko.lu.se

Course coordinator: David Tenenbaum, david.tenenbaum@nateko.lu.se

Course homepage: <http://www.nateko.lu.se/extg20>

Further information: The course is only given within the Master Programme in Disaster Risk Management and Climate Change Adaptation.