Department of Earth and Enironmental Sciences

NGEA32, Physical Geography: Geographical Information Systems - Advanced Course, 15 credits

Naturgeografi: Geografiska informationssystem - fortsättningskurs, 15 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2022-11-18. The syllabus comes into effect 2022-11-18 and is valid from the autumn semester 2023.

General information

The course is a compulsory course at first cycle level for a Degree of Bachelor of Science with a specialisation in physical geography and ecosystem science and also given as an elective course for other programmes at the faculty of natural sciences. The course can certain years also be given as a freestanding course.

Language of instruction: English

Main field of study	*Specialisation*
Geographical Information Science	G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements
Physical Geography and Ecosystem Science	G2F, First cycle, has at least 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. This include both theoretical knowledge and practical skills such as a basic understanding of programming.

Knowledge and understanding

On completion of the course, the students shall be able to:

- explain basic methods and conceptual models for 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 logics of computer programming and describe how programming can be used to deal with geographic data and problems
- describe how a map well corresponds to the reality by using kvantiva statistical methods for mapping accuracy
- account for the infrastructure of geographic data in society
- at a general level, describe which laws and regulations that concern the use of geographic data
- Illustrate advanced use of GIS within environment and society

Competence and skills

On completion of the course, the students shall be able to:

- 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 procedures and methods to solve complex geographic problems and to carry out these with GIS
- present result of GIS analysis in oral, written and map form for both specialists and for the public
- independently be able to collect additional knowledge in the area

Judgement and approach

On completion of the course, the students shall be able to:

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

Course content

The course contains a number of modules 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 labour market. 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 and ecosystem science problem areas.

Course design

The teaching consists of lectures, exercises, field exercises, seminars, group work and project work. Participation in exercises, field exercises, seminars, group work and project work and connected teaching activities is compulsory.

Assessment

The examination on the course consists of a written exam as well as through written reports and oral presentations during the course. The assessment is also based on a written report and an oral presentation at the end of the course. Students who do not pass the regular exam will have an additional opportunity to resit the exam soon thereafter.

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.

Grades

Grading scale includes the grades: Fail, Pass, Pass with distinction
To pass the entire course, approved exam, passed written assignments and participation in all compulsory parts are required. Grades in examination are given according to the scale Failed, Passed, Passed with Distinction while grades on written assignments and project work are given according to the grading scale Failed, Passed. The final grade is determined by the grade for the exam.

Entry requirements

Admission to the course requires general entry requirements, English 6/B, and 75 credits scientific studies including 15 credits Geographic information science the equivalent NGEA31 (geographic information systems - introduction) or be admitted to the second year on scientific Bachelor's programme at Lund University and have managed at least 7.5 credits of the course NGEA31.

Further information

This course replaces NGEA12 Geographic information systems - advanced course, 15 credits and cannot be included in degree together with this course or together with GISA22 GIS: Geographical Information System – Introduction, 15 credits.

The course is coordinated with EXTG25, 15 credits that is a course given for students at Lund's institute of technology LTH.

The course is given at the Department of Physical Geography and Ecosystem Science at Lund University.