Faculty of Social Sciences

SGEG20, GIS: Geographical Information System for the Social Sciences - Introduction with Applications, 30 credits

GIS: Geografiska Informationssystem för samhällsvetenskap - introduktion med tillämpningar, 30 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by the board of the Department of Human Geography on 2017-03-07 (STYR 2017/310) and was last revised on 2023-05-02 by The Board of the Department of Human Geography. The revised syllabus comes into effect 2024-09-02 and is valid from the autumn semester 2024.

General information

The course is offered as a freestanding course.

Language of instruction: Swedish

Main field of study	*Specialisation*
Human Geography	G1N, First cycle, has only upper-secondary level entry requirements

Learning outcomes

For a Pass on the course, students shall

Knowledge and understanding

- account for key spatial concepts,
- account for various theoretical and practical aspects of the use of geographical information systems (GIS), in both research studies and in investigation and planning work,
- describe different data models for digital spatial data, and compare the advantages and disadvantages of these,
- describe handling and analysis of geographical information in a GIS,

- account for the presentation possibilities of geographical information and cartographic design,
- account for spatial methods,

Competence and skills

- collect and handle spatial/geographical information,
- independently search for spatially related data and information within the themes of the course,
- independently carry out both vector-based and raster-based spatial analyses using standard software for GIS,
- apply GIS in different social science fields,
- independently process a scientific problem in spatial/geographical terms using GIS in a longer project,
- present procedures and results from collection and analysis of geographical information in writing and as maps for specialists and laymen,
- perform basic information searches and apply correct reference management,

Judgement and approach

- critically interpret and evaluate maps and other analytical techniques for spatial/geographically oriented problems,
- evaluate the importance of using geographical information and analysis within the social sciences and other areas of application,
- critically analyse and evaluate geographical information and its sources.

Course content

The course provides the student with broad practical and theoretical knowledge of spatial analysis, geographical information systems (GIS) and their applications in the social sciences. The variation of applications is broad in terms of both subject and geographical context. Analysis and visualisation of spatial information are key aspects of the course. The course consists of four modules:

Module 1: Introduction – Basics of GIS Technology (7.5 credits)

The module introduces the growing field of geographical information processing with a special focus on applications in the social sciences. Basic theories, key concepts and debates are presented together with practical exercises and labs. The labs also introduce basic analytical methods and tools within GIS. The areas of application of various GIS systems in administrations and organisations are problematised and discussed critically.

Module 2: GIS as Analytical Tools (7.5 credits)

The module is focused on practical applications of GIS and analysis of spatial data. Both vector-based and raster-based analyses are introduced and applied. The module is practically oriented and built up around a large number of exercises and labs, where immediate practical knowledge is communicated. The module provides more in-depth understanding of the methods and tools that were introduced during module 1, and it introduces new ones.

Module 3: GIS-oriented exercises (7.5 credits)

The module focuses on applying the content of module 1 and 2 in a concrete and cohesive format. The work conducted during the module is linked to a themed project that leads to a report in both written and cartographic format. Own data collection is included. Part of the work in the course is carried out in groups. The module prepares the student for the final module, where an individual project is to be carried out.

Module 4: Independent project (7.5 credits)

In the module, the student is to independently select a problem area appropriate for analysis using GIS and spatial analysis. The results are presented in an individual project, where particular emphasis is placed on the cartographic productions and on how the GIS technology has been used.

Course design

The teaching consists of lectures, labs, supervision and seminars. The lectures provide basic theoretical knowledge in collection, handling, analysis and visualisation of geographical data, and they introduce practical labs. The lectures also aim to present relevant literature and research. The labs introduce applicable GIS knowledge and primarily consist of independent work with GIS software. Supervision is provided during the labs on scheduled occasions. The seminars aim to increase understanding of the theoretical and practical components through group discussions and oral presentations.

Unless there are valid reasons to the contrary, participation in the seminars is compulsory. The opportunity to compensate for or re-sit compulsory components will be offered to students who have been unable to participate due to circumstances beyond their control such as accidents, sudden illness or similar. This also applies to students who have been absent because of duties as an elected student representative.

Assessment

Module 1 is assessed through three take-home exams.

Module 2 is assessed through two take-home exams, one invigilated exam and a group project.

Module 3 is assessed through one written themed project and two take-home exams.

Module 4 is assessed through a written project and an oral presentation of the project.

The course includes opportunities for assessment at the first examination, a re-sit close to the first examination and a second re-sit for courses that have ended during that academic year (catch-up exam). At least two further re-examinations on the same course content are offered within a year of the course being discontinued or undergoing a major revamp. After this, further re-examination opportunities are offered but in accordance with the current course syllabus.

The hours for supervision are restricted to the semester for which the student was initially registered. Exceptions can be made if there are valid reasons.

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: U=Fail, E=Sufficient, D=Satisfactory, C=Good, B=Very Good, A=Excellent
The grade for an unsatisfactory result is Fail. The student's performance is assessed based on the learning outcomes of the course. For the grade of E the student must show acceptable results. For the grade of D the student must show satisfactory results. For the grade of C the student must show good results. For the grade of B the student must show very good results. For the grade of A the student must show excellent results. For the grade of Fail the student must have shown unacceptable results.

The project in module 2, a themed project in module 3 and oral presentation of the project in module 4 are excluded from the grading scale above. These course components are awarded the grade of Pass or Fail. For the grade Pass, the student must show acceptable results. For the grade of Fail the student must have shown unacceptable results.

The conversion of the grades for the assessed components to a module grade and conversion of module grades to a final course grade are based on a mathematical model, where the letter grades are translated according to the following: A=5.0 B=4.0 C=3.5 D=3.0 and E=2.5, and an average for the assessed components is then calculated. Figures are rounded down, except for the grade A where 4.5 and over is rounded up to an A.

Module 1: The final module grade is determined by the student's results on the three take-home exams, where each assessed component is weighted equally.

Module 2: The final module grade is determined by the student's results on the two take-home exams (each weighted 35%) and the invigilated exam (weighted 30%).

Module 3: The final module grade is determined by the student's results on the themed project (weighted 70%) and a take-home exam (weighted 30%).

Module 4: The final module grade is determined by the student's result on the project.

The converted final course grade is determined by the student's results on the four modules, where all modules are weighted equally.

At the start of the course, the student is informed about the learning outcomes stated in the syllabus and the grading scale, and how this is applied during the course.

Entry requirements

General and courses corresponding to the following Swedish Upper Secondary School Programs: Social Studies 1b/1a1 + 1a2

Further information

The course may not be included in a degree together with SGEG10: GIS: Geographical Information Systems for the Social Sciences – Introduction with Applications (30 credits), SGEG11: Geographical Information Systems (GIS) with Broad Application (30 credits), SGEG 12: GIS: Geographical Information Systems for

the Social Sciences – Introduction with Applications (30 credits) or SGEG15: Geographical Information Systems for the Social Sciences – Introduction with Applications (30 credits).