

Course content

Geographical Information Systems (GIS) is a computer system designed to collect, manage, edit, analyze and present spatial information. This course introduces the basic concepts in mapping and GIS that will enable the students to make use of the system to study social phenomena. It encourages students to think both spatially and critically.

The following concepts are covered:

- The history of cartography and GIS
- GIS project design and implementation
- Map projections and spatial representations
- Collection and management of spatial data
- Spatial analysis
- Map design and visualization
- Uncertainty and how to deal with it
- Qualitative GIS
- Open source data and software

The course is composed of lectures and seminars in a computer lab.

The lectures are structured into four parts: 1) theory and background; 2) different stages of GIS project development; 3) more advanced GIS functions; and 4) limitations of GIS and problem solving.

A series of seminars will enable the students to make practical use of GIS with hands-on experience. Throughout the course, students learn how to develop spatial research questions and how to conduct spatial analysis using ESRI ArcGIS software and different open-source alternatives. A group project will integrate the concepts covered in the lectures with experience from the seminars to explore a current research question.

Learning outcome

The students will:

- Understand what makes spatial data special data.
- Learn about the most common file formats, sources for data in a GIS and how to merge spatial and non-spatial data.
- Learn how to develop research questions and design projects to study spatial phenomena.
- Learn spatial analysis, and how to make use of these techniques in studying social processes and phenomena.
- Get to know and practice some more advanced GIS methods, such as network analysis and spatial statistics.
- Identify common errors and uncertainties and how to deal with them accordingly.

General knowledge

The students will:

- Explain how GIS and social scientific research effectively can be integrated.
- Demonstrate the use of GIS as a social scientific research method.
- Discuss critically questions related to reliability and validity in spatial data.

Admission

(no change)

Prerequisites

Recommended previous knowledge

Students who want to enroll in the course should have basic computer skills and be comfortable with the Microsoft Windows environment to administer files and folders. Basic use of MS Excel is an advantage, as much data in GIS comes in tabular formats. No previous knowledge of ESRI ArcGIS or any other GIS software is required.

Teaching

The course will be taught at Blindern Campus at the University of Oslo. Some activities, such as data collection and site visits, may take place outside of campus.

Teaching will be held in English. In addition, all syllabus will be in English.

The seminar assignments are compulsory coursework. While students do not have to attend each seminar, it is highly recommended. All seminar assignments must be submitted to be accepted for examination.

Completed and approved compulsory course work is valid until the course is no longer offered. Students who have failed to complete the compulsory course work cannot take the exam.

[Application for change of seminar Group](#)

Absence from compulsory tuition activities

If you are ill or have another valid reason for being absent from compulsory tuition activities, your absence may be approved or the compulsory activity may be postponed.

- [Report absence from or the need for a postponed deadline on a compulsory tuition activity.](#)

Access to teaching

A student who has completed compulsory instruction and coursework and has had these approved, is not entitled to repeat that instruction and coursework. A student who has been admitted to a course, but who has not completed compulsory instruction and coursework or had these approved, is entitled to repeat that instruction and coursework, depending on available capacity.

Examination

Assessment is based on

- a group assignment (counting 40% of the final grade)
- 3-hour written examination (counting 60% of the final grade)

The group assignment should consist of maximum 5000 words and include a minimum of 5 and maximum of 10 figures and/or tables.

Both exams must be passed the same semester in order to receive a valid final grade.

[Previous exams](#)

(the rest without change)

