

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 and methods in mapping, spatial analysis, and GIS. It enables the students to make use of GIS software to study social phenomena. It encourages students to think both spatially and critically.

The following concepts are covered:

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

The course is composed of lectures and seminars.

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 seminar exercises 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 Pro 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.
- Recognize what makes good maps and other geographic output.
- Learn about the most common file formats, sources of data, and how to merge spatial and non-spatial data.
- Learn how to develop research questions, collect data 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

You 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

Students who are admitted to study programmes at UiO must each semester register which courses and exams they wish to sign up for in Studentweb.

If you are not already enrolled as a student at UiO, please see our information about admission requirements and procedures.

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, because much data in GIS comes in tabular formats. No previous knowledge of ESRI ArcGIS Pro 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.

Note: Hybrid teaching in Autumn 2021 semester.

Lectures will take place simultaneously physically and digitally via Zoom.

Seminars will take place simultaneously in computer lab and digitally via Zoom. The computer lab has a reduced seating capacity in order to prevent virus infection. Therefore, only some of the students will be allowed to work in the room. Reserving seats for each of the seminar sessions will be done via a registration form. Priority for allocation for physical seminars will be given to those who have limited working capacity from home, for example unstable internet connection or challenges related to hardware or software.

All teaching in the course might change to digital if there are new stricter COVID-19 restrictions.

More details will be sent to the admitted students approx. one week before the first lecture. Any questions can be addressed to [Marcin Sliwa](#).

Teaching will be held in English. All readings and seminar instructions are in English.

The seminar assignments are compulsory coursework. While students do not have to attend each seminar session, it is highly recommended.

Completed and approved compulsory course work is valid until the course is no longer offered. Students who have failed to complete the compulsory coursework 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

- 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

Written examination

The written examination is conducted in the digital examination system Inspera. You will need to familiarize yourself with the digital examination arrangements in Inspera.

Read more about written examinations using Inspera.

Submit assignments in Inspera

You submit [the group](#) assignment in the digital examination system Inspera. Read more about how to submit assignments in Inspera.

Use of sources and citation

You should familiarize yourself with the rules that apply to the use of sources and citations. If you violate the rules, you may be suspected of cheating/attempted cheating.

Language of examination

The examination text is given in English. You may submit your response in Norwegian, Swedish, Danish or English.

The group assignment can be written in English, Norwegian, Swedish or Danish.

Grading scale

Grades are awarded on a scale from A to F, where A is the best grade and F is a fail. Read more about the grading system.

Explanations and appeals

Explanation of grades and appeals

Resit an examination

If you are sick or have another valid reason for not attending the regular exam, we offer a postponed exam later in the same semester.

See also our information about resitting an exam.

Withdrawal from an examination

It is possible to take the exam up to 3 times. If you withdraw from the exam after the deadline or during the exam, this will be counted as an examination attempt.

Special examination arrangements

Application form, deadline and requirements for special examination arrangements.

Evaluation

The course is subject to continuous evaluation. At regular intervals we also ask students to participate in a more comprehensive evaluation.