**SGO1910 H2024 Revision**

**Course content**

Geographical Information Systems (GIS) are computer systems 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, including spatial data collection in the field. Throughout the course, students learn how to develop spatial research questions and how to conduct spatial analysis using QGIS and ArcGIS Pro. Students will also be introduced to spatial data management using R. A group project will integrate the concepts covered in the lectures with skills obtained through hands-on seminar assignments to explore a socio-spatial research question.

**Learning outcome**

The students will:

* Understand what makes spatial data special data.
* Recognize what constitutes good maps and data visualizations.
* Learn to use desktop and script-based GIS software, including QGIS, ArcGIS Pro and R.
* Learn how to develop research questions and design projects to study spatial phenomena.
* Learn basic 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 can be used in social scientific research.
* Demonstrate the use of GIS as a social scientific research method.
* Discuss critically questions related to reliability and validity in spatial data.

**Admission to the course**

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](http://www.uio.no/english/studies/registrations/course-registration/).

If you are not already enrolled as a student at UiO, please see our information about [admission requirements and procedures](http://www.uio.no/english/studies/admission/).

**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, R 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. All readings and seminar instructions are in English.

**Compulsory coursework**

The seminar assignments are compulsory coursework, and all seminar assignments must be approved before the student is eligible to take the exam. 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](https://www.uio.no/english/studies/registrations/semester-registration/seminargroup-sv.html)

**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 activity](https://www.uio.no/english/studies/examinations/compulsory-activities/sv-absence-from-compulsory-tuition-activities.html)

**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 case-based 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.

Course convenors might ask for permission to use and present group assignments in teaching, for knowledge sharing and innovation.