UNIVERSITY OF GOTHENBURG

DEPARTMENT OF EARTH SCIENCES

NGN235 GIS: Introduction to remote sensing, 7.5 credits

GIS: Introduktion till fjärranalys, 7,5 högskolepoäng

First Cycle

Confirmation

This course syllabus was confirmed by Department of Earth Sciences on 2018-06-15 and was last revised on 2020-03-06 to be valid from 2021-01-18, spring semester of 2021.

Field of education: Science 100%
Department: Department of Earth Sciences

Position in the educational system

The course can be part of the following programmes: 1) Bachelor's Programme in Earth Sciences (N1GVS) and 2) Bachelor's Programme in Geography (N1GEO)

Main field of studies	*Specialization*
Geography	G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements
Earth Sciences	G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Entry requirements

For acceptance into the course, a Passing grade in the course NGN180 Geographic Information Systems (GIS) - Introduction, or similar course/sub-course in GIS is required. Students with equivalent education can be admitted to the course after review.

Learning outcomes

On successful completion of the course the student will be able to:

Knowledge and understanding

- have knowledge about current remote sensing data sources, their characteristics and applications, as well as have knowledge about future developments in remote sensing
- understand the physical basis behind the response from remote sensing data
- have knowledge about and understand basic analysis methods of remote sensing data

Competence and skills

- independently search for and visualize remote sensing data
- carry out basic analysis of 2D and 3D remote sensing data
- communicate results from analyses via visualization in GIS

Judgement and approach

- interpret and apply accuracy assessment reports from remote sensing data and its products
- motivate choice of remote sensing data for various applications

The course is sustainability-related, which means that at least one of the learning outcomes clearly shows that the course content meets at least one of the University of Gothenburg's confirmed sustainability criteria.

Course content

The purpose of the course is to provide an overview of current 2D (e.g., satellite image data) and 3D remote sensing data sources (e.g., photogrammetry from drones and airborne LiDAR), with an introduction to theory, application areas and data analysis. Part one of the course (4,0 hp) consists of a progression of lectures, reading and practical exercises (assignments to be handed in). Part two of the course is an exam used to demonstrate the knowledge gained in the course. The course is primarily digital but physical meetings will be scheduled, for example, a demonstration of drones. The course focuses on remote sensing of the terrestrial environment.

Form of teaching

The course is internet-based and runs at a 25% study pace. The course contains video lectures, reading of literature, and exercises carried out by the students on their own home computer with access to open source software or software available through GU. The course contains 1-2 physical meetings, as well as communication via Adobe Connect during the course. The submission of exercises on time is mandatory for the course. An exam is given at the end of the course and is obligatory. Physical meetings, video lectures/communications and reading are not mandatory.

Language of instruction: Swedish and English
Some course literature may be available in English only, and lectures will be available in both Swedish and English.

Assessment

The student will be examined by:
Moment 1: Exercises (4 hp)
Moment 2: Written exam(3,5hp)

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

In cases where a course has been discontinued or has undergone major changes, the student shall normally be guaranteed at least three examination occasions (including the ordinary examination) during a period of at least one year from the last time the course was given.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).
At moment 1 the grades Pass (G), or Fail (U) will be given
At moment 2 the grades of Pass with Distinction (VG), Pass (G), or Fail (U) will be given

For the grade Pass (G) in the course the grade Pass (G) for the moment 1 and 2 is needed

For the grade Pass with Distinction (VG) in the course the grade Pass (G) in moment 1 and the grade Pass with Distinction (VG) in moment 2 is needed

Course evaluation

A course evaluation will be available at the end of the course. The results of and possible changes to the course will be shared with students who participated in the evaluation and students who are starting the course.