

NGEN09, Physical Geography: Remote Sensing - Digital Methods, 7.5 credits

Naturgeografi: Fjärranalys - digitala metoder, 7,5 högskolepoäng
Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2007-06-14 to be valid from 2007-07-01, autumn semester 2007.

General Information

The course is an elective course for second-cycle studies for Degree of Master of Science (120 credits) with a specialisation in physical geography and ecosystem analysis, geomatics or atmosphere science and biogeochemical cycles. The course is also given for students on faculty of technology and as a freestanding course.

Language of instruction: Swedish

Main field of studies

Physical Geography

Depth of study relative to the degree requirements

A1N, Second cycle, has only first-cycle course/s as entry requirements

Learning outcomes

The aim of the course is that students should have acquired on completion of the course the following knowledge and skills: Knowledge and understanding The student is expected to be able to:

- describe the basic physical principles of remote sensing,
- account for the basic technical principles of satellites, sensors and ground receiving segment for data collection and the properties of available data from these systems and
- account for the principles of digital image enhancement and image processing in remote sensing.

Skills and abilities

The student is expected to be able to:

- independently analyse digital remote sensing data with existing image processing software
- integrate remote sensing data with other data in geographic information systems
- actively contribute to discussions and present the results of remote sensing in writing, orally and in map form for specialists and laymen, and
- collect knowledge in the area more or less independently.

Judgement and approach

To pass the course, the student should:

- compile, evaluate and discuss choice of data and analytical method to solve a given remote sensing problem and
- critically review, evaluate and discuss the reliability of analyses that are based on remote sensing data.

Course content

The aim of the course is to communicate basic knowledge about theories and methods within digital remote sensing:

- Basic physical principles and terminology for electromagnetic radiation and the interaction of the radiation with different media (air, water, soil, vegetation etc.).
- Overview of different remote sensing satellites and their orbits, common remote sensing sensors and their basic principles, performance and data format.
- Data processing from raw data to geometric and radiometric correct images.
- Image processing in remote sensing, t.ex. image enhancement, data compression, image transformations and basic digital classification methods.
- Integration of field data with remote sensing data for classification and accuracy estimations.
- Thematic map production using remote sensing data.

Course design

The teaching consists of lectures, laboratory sessions, field exercises, seminars, group work and project work. Participation in laboratory sessions, field exercises, seminars, group work and project work and thereby integrated other teaching is compulsory.

Assessment

Examination takes place in writing in the form of examination and through evaluation of submitted work. For students who have not passed the regular examination, additional examination in close connection to this is offered.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

The grades in the course are passed with distinction, passed and failed. To pass the entire course, approved written exam, passed results of written assignments and presentations are required as well as participation in all compulsory parts.

Entry requirements

For admission to the course, 90 credits in scientific studies are required.

Further information

The course may not be included in a higher education qualification together with NGE609 Remote sensing, biogeosphere systems 10p and GIS417 Digital Remote sensing and GIS 7.5p, GISN08 Digital remote sensing and GIS 10 credits, NGEN08 Satellite remote sensing, 15 credits, NGE619 remote sensing- digital methods 5 p.

Subcourses in NGEN09, Physical Geography: Remote Sensing - Digital Methods

Applies from V08

0701 Remote Sensing - Digital Methods, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction