Faculty of Science

NGEA05, Physical Geography: Remote Sensing and GIS with Focus on the Environment, 15 credits

Naturgeografi: Fjärranalys och GIS med miljövårdsinriktning, 15 högskolepoäng

First Cycle / Grundnivå

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 also given as a freestanding course.

Language of instruction: English
The course is given in English when necessary.

Main field of studies	Depth of study relative to the degree requirements
Physical Geography	G1F, First cycle, has less than 60 credits in 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: Basic knowledge in electromagnetic radiation theory and the influence of the atmosphere. Knowledge of the information content and stereo capability of the air photo. Knowledge of computer classification of digital satellite data and practical experience of the process. Refelction characteristics of different objects in different wavelengths. Accurracy assessment and sampling techniques GPS functionality and technology. Basic GIS theories and practical handling of GIS data Be able to carry out simple overlay operations in GIS for both raster- and vector data. On-screen digitising General theoretical and practical knowledge in data interpolation. A certain understanding of database management and search functions (SQL). The student should also have acquired ability to: work in groups with projects and assignments present results of projects and assignments assimilate technical information and excercise instructions in English The course also develops the students'ability to communicate and their abilities by: oral presentation

of two practical exercises at a seminar using "PowerPoint".

Course content

The course intends to introduce how Geographic Information systems (GIS), and Remote sensing can be used within environmental planning. Theory is supplemented by practical computer exercises. The course consists of 8 subparts. 1. Introductory lectures and exercises in GIS and ArcGIS software. 2. Vector and raster structure in GIS and attribute data handling. 3. Projections and coordinate system 4. Aerial photo interpretation and spectral properties. In this part, the student is classifying an aerial photograph according to land use, digitise and creates information layers in a GIS. The image interpretation is subject to accurracy estimates using evaluatyion data collected in the field. Be presented orally and in report. 5. Various types of satellite sensors and platforms. Properties, differences, application fields. 6. Interpolation of point data to create continuous data, e.g. topography. 7. Computer classification of digital multi-spectral satellite data. 8. Vegetation-Climate-Satellite data. In this part, the interaction between different landscape elements in a larger area (region) is studied using a combination of remote sensing, GIS and modelling. Time series of digital satellite data are studied and trends, correlations etc., analysed.

Course design

The teaching consists of lectures, computer-based group work, field sections for data collection and project work. Participation in all parts except lectures is compulsory.

Assessment

Examination takes place through a written examination. For students who have not passed, 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 examination and passed results of written assignments are required and project presentations and participation in all compulsory parts. Student who requires a supplementory ECTS grade should inform the course coordinator at the start of the course.

Entry requirements

For admission to the course is required: General entry requirements and 30 credits.

Further information

The course may not be included in a higher education qualification together with VFT051 the 5p of Remote sensing NGE012 Remote sensing and GIS 10p, NGE605 Remote sensing for landscape studies 10p, NGEA03 Remote sensing for landscape studies, 15p.

Subcourses in NGEA05, Physical Geography: Remote Sensing and GIS with Focus on the Environment

Applies from V08

0701   Remote Sensing and GIS, 15,0 hp
          Grading scale: Fail, Pass, Pass with distinction