



LUND
UNIVERSITY

Faculty of Science

NGEN10, Physical Geography: Ecosystem Hydrology, 15 credits

Naturgeografi: Ekosystemhydrologi, 15 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 Master of Science with a specialisation in physical geography and ecosystem analysis, geomatics or atmosphere science and biogeochemical cycles. The course is also given as an individual course.

Language of instruction: English

The course is normally given in English.

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

Knowledge and understanding

The student is expected to:

- explain the energy exchange and the radiation relation/relationship at the surface of the soil
- account the transport of water from the soil through the plants to the atmosphere
- account for wind and turbulent transport within interfaces of the atmosphere
- describe temperature conditions and heat flow in the soil
- describe processes within ground and soil water hydrology
- explain the principles of different measuring instruments in the area of energy and water in soil, vegetation and atmosphere

Skills and ability:

The student is expected to:

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This is a translation of the course syllabus approved in Swedish

- Collect, organise and evaluate data in an integrated way
- Use simulation models to analyse the function of an ecosystem
- Use different measuring techniques in the area of energy and water in soil, vegetation and atmosphere.
- Analyse and present both collected and modelled data orally and in writing.

Course content

The aim of the course is to communicate knowledge of the processes that govern the state and the flow of mass and energy in the system soil, vegetation and atmosphere with emphasis on energy exchange and the hydrological cycle. Furthermore, the course offers an in-depth overall picture of the system and the interaction between the different physical and biological processes. Another important part of the course is to teach measuring technique for relevant variables and parameters in an ecosystem. This background is an essential precondition for the development of a long-term use and exploitation of terrestrial ecosystems.

The course gives a broad and advanced theoretical background of the most important energy exchange processes and interaction between the atmosphere and the vegetation and soil. To analyse the interplay of different processes within ecosystem, a simulation model of energy exchange and water balance is used. The student will learn how to use of sensor techniques and methods to measure and store abiotic and biotic variables and parameters by means of data loggers and other instruments. An important component of the course is a field data collection campaign to develop skills in measuring techniques and to apply theoretical knowledge on measurements of energy exchange and water balance.

Course design

The teaching consists of lectures, exercises, group assignments and project work. In the course, a field data collection campaign is included. Exercises and group assignments are compulsory.

Assessment

The examination consists of oral tests, computer-based tests, written reports and a written exam. For students who have failed the regular examination, additional occasion 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 pass with credit, passed and failed.

To pass the entire course, approved examination and passed results of written assignments are required as well as completed project presentations and participation in all compulsory parts.

Entry requirements

Admission to the course:

90 credits scientific studies including NGEA04 Ecosystem analysis, 15 credits, NGE621 Ecosystem analysis or 10p or the equivalent and NGE603 physical geography theory and methodology, 10p or NGE07 physical geography theory and methodology 15 credits or the equivalent.

Further information

The course may not be included in a higher education degree together with NGE606 Bio-geosphere dynamic processes, 10 p.

Subcourses in NGEN10, Physical Geography: Ecosystem Hydrology

Applies from V08

0701 Ecosystem Hydrology, 15,0 hp
Grading scale: Fail, Pass, Pass with distinction