



LUND
UNIVERSITY

Faculty of Science

NGEN04, Physical Geography: Greenhouse Gases and the Carbon Cycle, 15 credits

Naturgeografi: Växthusgaser och kolets kretslopp, 15 högskolepoäng
Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2007-03-01 to be valid from 2007-07-01, autumn semester 2007.

General Information

The course is an elective course for second-cycle studies and is given within the programs for Master's degree (120 credits) in physical geography, ecosystem analysis and Master's degree (120 credits) in atmosphere science and biogeochemical cycles and Master's degree (120 credits) in environmental sciences. 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

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 to give an advanced theoretical and practical knowledge within the subject area ecosystem analysis with special focus on the biogeochemical cycles of the carbon and greenhouse gases and the processes that govern these. Furthermore, the course gives a deeper understanding of the feedback mechanisms between the biogeochemical cycle of carbon and greenhouse gases and the climate. The course should also give ability to design solutions to problems within the environmental sector that is related to the biogeochemical cycles of carbon and greenhouse gases. Knowledge and understanding The student is expected in an advanced way be able to: explain the abiotic and biotic processes that govern the biogeochemical cycles of carbon and greenhouse gases in mainly northern hemisphere ecosystems explain the feedback mechanisms between carbon,

greenhouse gases and nutrients biogeochemical cycles, vegetation dynamics and the climate explain the principles behind computer-, field-, and laboratory-based methods that are used to measure or estimate the biogeochemical cycles of carbon and greenhouse gases Skills and abilities The student is expected to be able to: independently choose, use and critically review relevant methods to analyse the exchange of carbon and greenhouse gases in the system soil \{2013\} plant \{2013\} atmosphere practically design, plan and carry out research and investigation activities within the subject area assess; reflect over and critical review literature in the area collect, compile and analyse data and discuss and present results and conclusions in an advanced, structured and logical way and in a scientific context Judgement and approach The student is expected to: be able to assess the society's measures for handling of environmental problems related to carbon and greenhouse gases have achieved a critical approach to methods and analysis results be aware of the difficulties related to estimations of the carbon cycle

Course content

Course contain lectures that aims to give a solid theoretical knowledge about carbon cycle, vegetation dynamics, greenhouse gases and the environmental problems in the area. The course treat e.g. assimilation of carbon in ecosystems via the photosynthesis, discharges of carbon from the ecosystem via respiration and decomposition and production of greenhouse gases (carbon dioxide, methane, nitrous oxide and other volatile organic carbon compounds). How these processes are influenced by vegetation and climate changes in mainly northern ecosystems is also treated. The course contains several practical parts such as field, computer and laboratory based exercises and a longer fieldwork. These parts intend to give theoretical and practical knowledge of the methods that are used in the area.

Course design

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

Assessment

The examination consists of a written examination at the end of the course and grading of oral and written reports on exercises and project work during the course. 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.

In the course, the grades are passed with distinction, passed and failed. To pass the entire course, passed exercises, group assignments and project presentations are required and participation in all compulsory parts. The final grade is determined by summarising the results of all parts that are included in the examination.

Entry requirements

For admission to the course, general entry requirements are required and 90 credits scientific studies including NGEA04 Ecosystem analysis, 15 credits or NGE621 Ecosystem analysis, 10 credits or the equivalent.

Subcourses in NGEN04, Physical Geography: Greenhouse Gases and the Carbon Cycle

Applies from H07

0701 Greenhouse Gases and the Carbon Cycle, 15,0 hp
Grading scale: Fail, Pass, Pass with distinction