



Department of Earth and Environmental Sciences

NGEN17, Physical Geography: Global Ecosystem Dynamics, 15 credits

Naturgeografi: Global ekosystemdynamik, 15 högskolepoäng
Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2018-09-28. The syllabus comes into effect 2018-09-28 and is valid from the autumn semester 2018.

General information

The course is an elective course at second cycle level and given in programmes for Degree of Master (120 credits) in physical geography and ecosystem science Degree of Master (120 credits) in atmosphere science and biogeochemical cycles as well as Degree of Master (120 credits) in environmental sciences.

Language of instruction: English

<i>Main field of study</i>	<i>Specialisation</i>
Atmospheric Sciences and Biogeochemical Cycles	A1F, Second cycle, has second-cycle course/s as entry requirements
Physical Geography and Ecosystem Science	A1F, Second cycle, has second-cycle course/s as entry requirements

Learning outcomes

The course deals with ecosystem processes based on an interdisciplinary perspective and include natural ecosystems, ecosystems with production oriented agriculture and forestry as well as urban ecosystems. The course focus on methodology for the analysis of ecosystems' development over time in relation to: 1) internal factors such as interaction between biotic and abiotic processes, 2) external factors such as human influence and climate change, 3) interaction between different spatial scales (local, regional and global). The general aim is that students should be able to define ecosystem processes and identify how the processes are influenced by different actors in society and their need of ecosystem services, as well as of direct and indirect climateeffekter.

Knowledge and understanding

On completion of the course, the students shall be able to

- identify ecosystem processes that, directly or indirectly, could be influenced by changes in land use and climate change
- account for the concept ecosystem services and how it can be used in a decision making situation
- based on case studies on the influence of climate and land use on an ecosystem be able to identify appropriate physical geography methods (GIS, remote sensing, climate modeling, ecosystem modeling and sampling and statistical analysis) for scenario analysis, evaluation and follow up of mitigation and adaptation actions
- justify choice of method to review goal conflicts and handle uncertainties in a climate adaptation process

Competence and skills

On completion of the course, the students shall be able to

- critically review how different ecosystems are influenced by changes in land use and climate in relation to different time perspectives and spatial scales
- argue for choice of modelling tools and valuation method, and identify how future projections are influenced by uncertainties related to the choice of method
- identify case study specific key stakeholders and evaluate their preferences for different ecosystem services
- produce professional texts based on relevant research and present these from an academic as well as a popular science perspective

Judgement and approach

On completion of the course, the students shall be able to

- perform scenario analyses and present different possible future development directions based on different scenarios of climate change and changes in land use or management method
- review and evaluate different actors' perspective in analysis and decision making situations, and evaluate potential consequences of decision in terms of influence on the ecosystem

Course content

The course highlights different methods for the analysis of interplay between climate land use biodiversity and ecosystem services at different spatial scales. The course content includes natural ecosystems, ecosystems with production oriented agriculture and forestry as well as urban ecosystems. The course contains exercises on how to quantify influence of global and regional environmental and climate changes based on different actors' perspectives, earlier experiences and possible adaptation measures. Identification of appropriate methods to produce scenarios, evaluate and follow adaptation processes as well as to identify and handle method related uncertainties are included in the exercises.

Course design

The first part of the course consists of lectures, fieldwork, field trips, and practical exercises. Participation in fieldwork, field trips and practical exercises are compulsory. The second part of the course consists mainly of a larger literature-based project work with a specialisation relevant for the theoretical parts included in the course.

Assessment

Examination of course's theoretical parts consist of a written examination halfway into the course. For students who have failed the regular examination, an additional occasion in close connection to this is offered. The second part of the course (the literature-based project) is assessed by grading of a written report at the end of the course.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Grades

Grading scale includes the grades: Fail, Pass, Pass with distinction
To pass the entire course, passed exercises, group assignments and project presentations are required as well as participation in all compulsory parts. The final grade is determined by combining the results of the various assessed course components. The weight of these will be presented at course start.

Entry requirements

For admission to course general entry requirements as well as 90 credits scientific studies of which 45 credits should be at second cycle level are required. The course NGEA04 Ecosystem analysis, 15 credits or the equivalent is recommended.

Further information

The course can not be included in a degree together with NGEN03 Global Ecosystem dynamics, 15 credits.