Faculty of Science

MVEN18, Environmental Science: Methods for Climate Risk Management, 15 credits

Miljövetenskap: Klimatstrategiska metoder, 15 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2010-12-07 to be valid from 2010-12-07, spring semester 2011.

General Information

The course is a compulsory second cycle component of a degree Master (120 credits) in the Master's programme in applied climate strategy.

Language of instruction: Swedish

Learning outcomes

Knowledge and understanding

On completion of the course the students shall be able to

- account for principles and methods of different approaches based in life cycle analysis and discuss how and where these approaches can be applied to assess the environmental impact of complex socio-economic structures, processes, products and services
- critically reflect on how decisions on environmental strategy of different actors, including public authorities and industry, can be supported by systematic analysis methods, such as life cycle analysis and its derivatives
- discuss and critically analyse general methods and key concepts of risk analysis and adaptation integration that are used in the context of climate change adaptation
- identify and discuss different types of measures to decrease climate-related risks, including preventive measures, preparedness and risk financing

- critically reflect on the links between climate change adaptation, risk management and development, discuss associated challenges and climate change adaptation from a systems perspective

Competence and skills

On completion of the course the students shall be able to

- identify and critically review parameters that are crucial to the quality of a life cycle analysis
- interpret the results of analytical studies of the information provided by systematic environmental assessment tools and the reliability of this information
- critically analyse the potential impact of different types of climate-related disasters and the key underlying circumstances affecting the vulnerability and capacity of individuals and societies
- apply different methods and strategies in order to integrate climate change adaptation in different sectors of society, and combine top-down and bottom-up methods in the field of climate change adaptation

Judgement and approach

On completion of the course, students shall be able to

- make assessments of issues of climate strategy informed by relevant disciplinary, societal and ethical aspects
- identify their need of further knowledge and take responsibility for their ongoing learning

Course content

The course starts with an introduction to systematic methods of evaluating environmental impact from complex socio-economic structures, processes, products or services through life cycle analysis (LCA) and related methods such as hybrid input-output-LCA, material input per unit of service (MIPS) and methods of ecological footprint and carbon footprint. The advantages and disadvantages of the different methods are reviewed, so as to enable students to develop their ability to assess the quality and the objectivity of life-cycle-based environmental assessments.

Furthermore, the course provides students with an overview of the key methods and concepts of climate change adaptation. More specifically, students address the links between risk management and climate change adaptation and their connection to sustainable development and international development cooperation. Against this

background, methods of risk analysis and risk assessment and integration of climate change adaptation are also studied. The course focuses on the whole process of risk management, including methods of risk analysis, evaluation of the results, and implementation of concrete strategies and measures in order to decrease existing and future risks and adapt to them in a sustainable way.

Course design

The teaching consists of lectures, seminars, exercises and project work. Participation in seminars, exercises and project work and associated components is compulsory.

Assessment

The assessment is based on written assignments, oral presentations and project reports throughout the course.

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.
For a grade of Pass on the course as a whole, students must have passed the written assignments, oral presentations and project reports, and participated in all compulsory components. The final grade is determined by an aggregate of the assessed components.

Entry requirements

To be admitted to the course, students must have a first-cycle degree of at least 180 credits or an equivalent international degree. Furthermore, they must also have passed the courses MVEN15 Climate Change, Science and Society, 15 credits, MVEN16 Climate Policy, Governance and Communication, 15 credits, and MVEN17 Planning with Climate in Focus, 15 credits, or the equivalent. Students must also have Swedish B and English B or the equivalent.

Subcourses in MVEN18, Environmental Science: Methods for Climate Risk Management

Applies from V11

1101 Methods for Climate Risk Management, 15,0 hp
Grading scale: Fail, Pass, Pass with distinction