



Faculty of Social Sciences

MEST01, Drivers and Dynamics of Climate Change, 15 credits

Klimatförändringens drivkrafter och dynamik, 15 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by The Board of the Lund University Centre for Sustainability Studies on 2024-05-31 (STYR2024/1440). The syllabus comes into effect 2024-10-14 and is valid from the autumn semester 2025.

General information

The course is a first term compulsory course within Lund University Master's Programme in Climate Change and Society (LUCAS), 120 credits.

Language of instruction: English

Main field of study

Environmental Studies and
Sustainability Science

Specialisation

A1N, Second cycle, has only first-cycle course/s
as entry requirements

Learning outcomes

Upon the completion of the course, the student shall be able to:

Knowledge and understanding

- Demonstrate a broad understanding of the dynamics of the climate system and its complexity in terms of feedback, tipping points, cascade effects and interactions with other ecosystems
- Investigate and differentiate the effects of human activity on the climate system, including how they affect extreme events and long-term processes
- Demonstrate the ability to critically assess the most important scientific debates within research on the climate, such as but not limited to, uncertainty of models.

Competence and skills

- Demonstrate the ability to independently analyse current research in climate science
- Systematically review and assess scientific research on the physical effects of climate change
- Perform simple simulation models to analyse system dynamics, alternative future scenarios and uncertainty
- Demonstrate the ability to formulate, present and discuss conclusions regarding the dynamics and drivers of the climate system in writing and orally, both independently and in groups.

Judgement and approach

- Demonstrate an in-depth ability to recognise and take into account the complexity of the climate system and its implications for climate science and policy
- Demonstrate an in-depth ability to critically reflect on recent developments in climate science.

Course content

The aim of the course is to provide students with a broad understanding of the scientific foundations of climate change, which will form the basis for the programme's future courses that will explore the societal aspects of climate change and their potential solutions. The course provides a basic scientific understanding of the drivers, dynamics and complexities of the climate system, and its links to terrestrial and marine systems. The course also provides an understanding and ability to analyse human interaction with the climate system and the physical effects of climate change. Students will be trained to work with the latest climate research and current debates in climate science, as well as familiarise themselves with the use of simulation models and scenario assessments. The course will also familiarise students with the reports and methodological approaches of the Intergovernmental Panel on Climate Change (IPCC), in particular those of Working Group 1, which deals with the physical science basis of climate change.

Course design

The course consists of lectures, seminars and practical exercises. Group assignments and exercises are combined with individual assignments to develop the student's understanding of the drivers and dynamics of climate change and provide practical skills related to scientific assessments of climate change.

Assessment

Course assessment is based on four examinations:

- Written group take-home exam (5 credits)
- Written individual take-home exam (5 credits)
- Individual practical take-home exam (5 credits)

- Oral presentation of written group take-home exam (0 credit)

The course includes opportunities for assessment at a first examination, a re-sit close to the first examination and a second re-sit for courses that have ended during that school year. Two further re-examinations on the same course content are offered within a year of the end of the course. After this, further re-examination opportunities are offered but in accordance with the current course syllabus. A student who has taken two examinations in a course or a part of a course without obtaining a pass grade is entitled to the nomination of another examiner unless there are special reasons to the contrary.

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, Three, Four, Five

The oral presentation of the written group take-home exam is excluded from the grading scale above. The grade for this component is Fail - Pass.

At the start of the course, students are informed about the learning outcomes stated in the syllabus and the grading scale and how it is applied on the course.

Overall course grade:

The grade for the entire course consists of the average grade of the three exams that are assessed according to the Fail-5-4-3 grading scale. The written group take-home exam is worth 33% of the final grade. The written individual take-home exam is worth 33% of the final grade. The individual practical take-home exam is worth 33% of the final grade. For a grade of 3 on the entire course the student must have been awarded at least 3 on all graded exams and a Pass on the oral presentation of the written group take-home exam.

Exam	Credits	Grades	Part of final grade for the course
Written group take-home exam	5	Fail-3-4-5	33%
Written individual take-home exam	5	Fail-3-4-5	33%
Individual practical take-home exam	5	Fail-3-4-5	33%
Oral presentation of written group take-home exam	0	Fail-Pass	0%
	15		100%

Example: The student got the grade of 3 on the written group take-home exam, the grade of 5 on the written individual take-home exam, the grade of 4 on the individual practical take-home exam, and the grade of Pass on the oral presentation of the written group take-home exam. The final grade is 4
 $((3*33)+(5*33)+(4*33)+(G*0))/100=3,96 < 4.5$ is rounded down and $4.5 >$ is rounded up.

Entry requirements

To be admitted to the course, the student must hold a Bachelor's degree, including at least 180 ECTS.

A good command of spoken and written English, equivalent to English 6/B (advanced) proficiency in the Swedish secondary system, is required. Equivalent assessments will be made according to national guidelines.