Climate Science and Climate Change

Klimatvetenskap och klimatförändringar
7.5 credits

Single subject and programme course

746A91

Valid from: 2022 Spring semester

Determined by	**Main field of study**	
Course and Programme Syllabus Board at the Faculty of Arts and Sciences	Environmental Science	
Date determined	**Course level**	**Progressive specialisation**
2021-06-07	Second cycle	A1N
Revised by	**Disciplinary domain**	
	Natural sciences	
Revision date	**Subject group**	
	Environmental Science	
Offered first time	**Offered for the last time**	
Spring semester 2022		
Department	**Replaced by**	
Institutionen för Tema		

Course offered for

- Master´s Programme in Science for Sustainable Development

Entry requirements

- Bachelor's degree equivalent to a Swedish Kandidatexamen in one of the following areas:
  - natural sciences,
  - social sciences,
  - humanities or
  - engineering
- 15 ECTS credits passed in Environmental Sciences, Sustainable Development or equivalent
- English corresponding to the level of English in Swedish upper secondary education (Engelska 6)
  Exemption from Swedish

Intended learning outcomes

After completion of the course, the student should on an advanced level be able to:

- map the effects of climate change
- evaluate scenarios for historical and contemporary climate change
- critically analyze natural and anthropogenic driving forces that shape the earth climate, regulation, and feedback mechanisms
- critically evaluate emission reduction measures, their interactions and synergies
- communicate relevant knowledge within climate science and climate change orally and in text.

Course content

The course deals with the earth's climate from a historical perspective spanning history from the Archean to the Anthropocene. The course maps interactions between natural and anthropogenic driving forces which regulate the earth's climate and how they interact with physical, chemical, and biogeochemical processes. Climate change is modeled and evaluated.
The impacts of climate change on natural and social systems are analyzed together with measures to deal with climate change and meet climate goals for sustainable development. Current and suggested measures for emission reduction are analyzed to achieve climate goals and impact-reducing strategies.

Teaching and working methods

Teaching and working methods include lectures, laboratory activities, seminars, group works and written individual and group assignments. In addition, students undertake self-studies.

Teaching and examination language: English

Examination

The course is examined through:

• active participation in seminars and laboratory activities. Grading scale: EC/PF
• group written assignments. Grading scale: EC/PF
• individual written assignment. Grading scale: EC

For a final passing grade (E) on the course, Pass grade is required for active participation in seminars, laboratory activities and group written assignments as well as at least E for the individual written assignment. A higher grade will be based on the individual written assignment.

Detailed information can be found in the course handbook.

If special circumstances prevail, and if it is possible with consideration of the nature of the compulsory component, the examiner may decide to replace the compulsory component with another equivalent component.

If the LiU coordinator for students with disabilities has granted a student the right to an adapted examination for a written examination in an examination hall, the student has the right to it.

If the coordinator has recommended for the student an adapted examination or alternative form of examination, the examiner may grant this if the examiner assesses that it is possible, based on consideration of the course objectives.

An examiner may also decide that an adapted examination or alternative form of examination if the examiner assessed that special circumstances prevail, and the examiner assesses that it is possible while maintaining the objectives of the course.

Students failing an exam covering either the entire course or part of the course twice are entitled to have a new examiner appointed for the reexamination.

Students who have passed an examination may not retake it in order to improve their grades.

Grades

ECTS, EC

Other information

Planning and implementation of a course must take its starting point in the wording of the syllabus. The course evaluation included in each course must therefore take up the question how well the course agrees with the syllabus.

The course is conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

If special circumstances prevail, the vice-chancellor may in a special decision specify the preconditions for temporary deviations from this course syllabus, and delegate the right to take such decisions.