UNIVERSITY OF GOTHENBURG

DEPARTMENT OF EARTH SCIENCES

NGEO302 Arctic in a Changing Climate, 5 credits

Arktis i föränderligt klimat, 5 högskolepoäng

Third-cycle level / Forskarnivå

Confirmation

This syllabus was confirmed by the Department of Earth Sciences on 2018-12-26, and is valid from Spring semester 2019.

Responsible Department
Department of Earth Sciences, Faculty of Science

Entry requirements

Admitted to third cycle education

Learning outcomes

On successful completion of the course, the third-cycle student is expected to be able to:

Knowledge and understanding

- understand how the Arctic is affected by the ongoing climate change
- conceive how climate induced changes in the Arctic influence global processes (as the Atmospheric and Ocean circulation)
- describe the different Arctic systems (e.g. Biosphere, Atmosphere, Cryosphere, and Ocean), their interactions and how these interactions will change with changed environmental conditions

Competence and skills

- review and summarize scientific literature from different research disciplines
- present, discuss and argue climate change scenarios (causes and consequences) in speech and text
- collaborate interdisciplinary with other students/scientists

Judgement and approach

- discuss the significance and potential of the Arctic systems feedback mechanisms (as: sea ice and snow cover changes, permafrost changes, and ocean and atmospheric circulation changes)
- reflect on how these feedbacks influence the global climate

Sustainability labelling

The course is sustainability-focused, which means that at least one of the course's learning outcomes clearly shows that the course content meets at least one of the University of Gothenburg's stipulated criteria for sustainablity labelling. Content of this kind also constitutes the course's main focus.

Course content

The course will give graduate students a broad holistic knowledge about the Arctic and how the Arctic systems are affected by the ongoing climate change, including potentially feedbacks to the climate system. Lectures and seminars will take an earth system perspective and cover: Arctic Ocean, Arctic Atmosphere, Arctic Cryosphere, Arctic terrestrial ecology, and climate modelling.

For each topic the course will give background knowledge of the system, observed and expected changes in the light of a changing climate and also knowledge on how these systems interacts and influences each other.

Types of instruction

This course will be given as a 4 weeks course, with literature study during the first week. The second week will include lectures, seminars and student activities. During the last two weeks students will prepare a written report.

Each day of the lecturing week will have a special theme (i.e. Atmosphere, Terrestrial, Cryosphere, Marine, Climate modelling), with lectures by invited speakers. The lectures will be followed by discussions / group work based on recent literature and papers that the lecturer has selected beforehand. The literature will aim go give both the broad holistic picture and more detailed process specific knowledge.

During the course each student will present a review of at least one paper and within two weeks after the course the student are expected to hand in a written report.

All items except lectures are compulsory.

Language of instruction
The course is given in English.

Grades

The grade Pass (G) or Fail (U) is given in this course.

Types of assessment

The grade will be based on contributing in the student activities, presentations and on the written report. Contribution in discussions, group work and presentations will be assessed as YES or NO and will be monitored by the teacher/assistant. The written report will be run through URKUND and the course responsible/teacher and course examiner will then read and grade the work and assess so it correspond to a third cycle educational level and contain no major flaws in the scientific discussion to receive a PASS grading.

Missed compulsory sessions can be made up during by a written review of the topic missed out (to be handed in within two weeks after the course).

A student who has failed to successfully participate and hand in tasks twice has the right to change examiner, if it is possible. A written application should be sent to the Department.delar

In cases where a course has been discontinued or major changes have been made, a student should be guaranteed at least three examination occasions (including the ordinary examination occasion) during a time of at least one year from the last time the course was given.

Course evaluation

Course evaluation is carried out together with the participants at the end of the course, and is followed by an individual, anonymous paper survey. The results and possible changes in the course will be shared with the students who participated in the evaluation and to those who are beginning the next course.