



DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES

ES2613 Global change - problem, analysis, measures, 7.5 credits

Globala förändringar - problem, analys, åtgärder, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Faculty of Science on 2011-10-27 and was last revised on 2023-11-28 by Department of Biological and Environmental Sciences to be valid from 2023-11-28, spring semester of 2024.

Field of education: Science 100%

Department: Department of Biological and Environmental Sciences

Position in the educational system

The course is the first course within the two Master's programs: Environmental science (N2MVN) and Atmospheric science, climate and ecosystems (N2ACE). The course is also an optional course within the Master's program in Biology (N2BIO). The course can also be read as a freestanding course.

The course can be part of the following programmes: 1) Atmosphere, Climate and Ecosystems, Master's Programme (N2ACE) and 2) Environmental Sciences (N2MVN)

<i>Main field of studies</i>	<i>Specialization</i>
Biology	A1N, Second cycle, has only first-cycle course/s as entry requirements
Environmental Science	A1N, Second cycle, has only first-cycle course/s as entry requirements

Entry requirements

Admission to the course requires one of the following options:

- 1) 120 HEC out of which at least 90 HEC are in natural science (biology, chemistry, earth science, environmental science with emphasis on natural science, physics) and at least 15 HEC in environmental science. Students with equivalent education can be allowed to enter the course.

2) Bachelor's degree in biology

Applicants must prove their knowledge of English corresponding to English 6/English B from Swedish Upper Secondary School. For more information, see English language requirements on Universityadmissions.se

Learning outcomes

The course provides knowledge about how society tackles major global environmental problems, such as global warming, ozone depletion and transboundary air pollutants. A special focus is on the design and implementation of international agreements, based on both natural science and social science (in particular law) perspectives. Furthermore, the course also includes policy making at EU, national, regional and local level.

To pass the course the participants should have a far reaching understanding of:

- the principles ruling international environmental agreements
- the projected impacts of climate change on ecosystems and ecosystem services
- the Climate convention, The Kyoto protocol, emissions of greenhouse gases and trade with emission allowances for greenhouse gases
- the Vienna Convention to Protect the Ozone Layer, The Montreal Protocol and the factors that made this agreement successful
- the Convention on Long-Range Transboundary Air Pollution (LRTAP) and its protocols and the scientific tools and the computer simulation methods on which the work of the convention is based, and the work within EU in relation to LRTAP
- EU legislation with emphasis on the role of EU as a part to international conventions
- EU, Swedish, regional and local policy making in the field of climate change
- how policies in the climate change area are implemented and what measures that are the actual outcome, all the way down to the company, the public body and the citizen. Proposed but not yet implemented measures are also included

After completed course, the participants should have shown ability to summarise, analyse and orally present scientific material, perform a computer simulation projecting climate change impacts, formulate questions and find answers concerning international environmental collaboration.

After completion of the course the student should be able to critically evaluate the positions of different actors active in and around international environmental agreements, in particular the use of scientific data and results as drivers for these regimes. The student should also be able have an opinion on what obstacles there are in negotiating a follow up agreements to the Kyoto protocol, and also be able to discuss the relation between a signed international agreement and the following EU and national policy making process.

The course is sustainability-focused, which means that at least one of the learning outcomes clearly shows that the course content meets at least one of the University of Gothenburg's confirmed sustainability criteria. The content also constitutes the course's main focus.

Course content

The overall objective of the course is to study climate change, stratospheric ozone depletion and transboundary air pollutant issues, and in particular how society initiates solutions based on a scientific understanding of the problems. The course includes an introduction to the scientific background to these problems as well as studies of how the international society develops international agreements in the field. An important aspect is how scientific methods and discoveries are implemented in the agreements. A third part of the course is devoted to how those agreements are translated into national policies and in the end to practical measures from actors in society.

The course consists of three parts:

- 1) Compulsory elements, in the form of e.g. computer exercise, seminars and other similar moments marked in the course schedule, corresponding to a bit less than one week. Students that do not take part in compulsory elements of the course are required to submit written summaries of the content of these moments to pass the course (1 HEC).
- 2) Final individual exam in written form (hall exam) on theoretical parts (4.5 HEC)
- 3) A group task presented as a written report and an oral presentation at a seminar (2 HEC)

Form of teaching

The forms of studies during the course include lectures, seminars, a computer simulation exercise, group exercises and one oral presentation. The course is given at daytime, fulltime.

Language of instruction: English

Assessment

In order to pass the course, the student must receive Pass on all three subparts. .

A student who has failed a test twice has the right to change examiners, if it is possible. A written application should be sent to the Department.

If the course is discontinued or major changes have been made, the student is 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 in the

original form.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

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In order to be awarded Pass for the whole course of 7,5 HEC, Pass is required on all three parts. For Pass with Distinction on the course, Pass with Distinction (normally 80%) is required on subpart 2 and Pass on both parts 1 and 3. On parts 1 and 3, Fail (U) and Pass (G) are the only grades given.

Course evaluation

Both an oral and written evaluation will be done at the end of the course. The result of the evaluation will be presented to the students and to the following courses students.