



GÖTEBORGS UNIVERSITET

Earth System Science, 5 credits (hp)

Course period: 2016-12-02 to 2017-01-15	Last day for application: 2016-11-15
Course leader / Address for applications: Hans Linderholm / hansl@gvc.gu.se	
Course description: The aim of the ESS 1 course is twofold: - Give an introduction to the sub-systems, or "spheres", of the Earth system in order to give students from various disciplines a common base of knowledge. - Study, in depth, the processes relevant for global change, including the various interactions between the spheres. The focus is firstly on the physical reality of the natural systems and secondly on the anthropogenic (human) influence.	
Responsible department and other participation departments/organisations: Department of Earth Sciences, University of Gothenburg	
Teachers: Hans Linderholm (Course leader and main contact) Teachers from the Department of Earth Sciences / Invited speakers	
Examiner: Hans Linderholm	



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Faculty of Science; Department of Earth Sciences

Earth System Science, 5 hp

Third cycle education

1. Confirmation

The syllabus was confirmed by the Head of the Department of Earth Sciences 2016-05-31

Disciplinary domain: Science

Department in charge: Department of Earth Sciences

Main field of study: Earth System Sciences

2. Position in the educational system

Third-cycle education.

3. Entry requirements

A course entry should be sent by email to the course coordinator 2 weeks before start. A background in natural science is necessary in order to profit from the course. "Global Change" (master-level course) or similar is recommended. The course is limited to 25 participants.

4. Course content

The first two weeks will introduce important concepts for each sphere. After this introduction, we will go deeper into each subsystem and study important interaction processes between the spheres. Lectures, interactive discussions and exercises will be mixed throughout the course.

Workshop

The Anthroposphere (human effects on the Earth's systems) will be focused to a compulsory 1-day workshop with group presentations and discussions.

Practical Exercises

Practical exercises will be handed out for each of the five spheres.



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Examination

The examination involves two compulsory elements:

- Assignments for each sphere - oral or written.
- Participation in the workshop

5. Outcomes

After completion of the course the Ph.D. student is expected to be able to

Explain the main physical mechanisms of the Earth's systems (atmosphere, hydrosphere, cryosphere, biosphere and solid Earth) and their evolution over time.

- Describe the general features of the interactions between the systems.
- Understand in what way and to what extent human activities influence the Earth system.

6. Required reading

The Earth System (3rd edition), Lee R Kump, James F. Kasting and Robert G. Crane, Prentice Hall, 2009, ISBN 978-0-32-1597779. The book gives a logic and educational introduction to ESS and provides the necessary structure for a coherent course. The lecturers will provide additional material and hand-outs to raise the scientific content to a PhD-level.

7. Assessment

To pass the course the assignments have to be submitted in due time and graded with G (pass).

8. Grading scale

The grading scale comprises Fail, (U), Pass (G).

9. Course Evaluation

The course evaluation is carried out together with the Ph.D. students at the end of each year.

10. Language of instruction

The language of the seminars and instruction is English.