



DEPARTMENT OF EARTH SCIENCES

NGEO308 Modelling strategies, 3 credits

Modellerings strategier, 3 högskolepoäng

Third-cycle level / Forskarnivå

Confirmation

This syllabus was confirmed by the Department of Earth Sciences on 2019-11-25, and is valid from Spring semester 2020.

Responsible Department

Department of Earth Sciences, Faculty of Science

Entry requirements

Admitted to third cycle education.

Learning outcomes

The goal of this course is to introduce students to a broad range of different aspects of modelling. Different types of models, different modelling concepts and strategies will be discussed as well as modelling terminology and its usage in different disciplines.

Knowledge and understanding

- Recognize important modelling concepts and strategies
- Understand important terms used in modelling and recognize different usages of terms in different disciplines
- Understand the main challenges in modelling, e.g. different sources and the consequences of uncertainty
- Get a basic understanding of the potential gaps between experimental work and modelling and the challenges arising from those

Competence and skills

The emphasis of this course is on increasing the knowledge and understanding of courses in regards to modelling used in natural sciences.

The focus of the course is on providing a basic understanding of what models are, different modelling concepts, limitations and possibilities. The course will not enable students to develop models or improve existing ones.

Judgement and approach

Ability to make a basic assessment of a models field of application, limitations and to enable communication with modelers.

Course content

The intended audience are foremost Ph.D. students who have not modelled so far but also students who are already familiar with specific types of models but not with others. The goal is to create a common understanding of how models are developed and used in a very general sense. The course consists of few theory sessions, including group work and lectures presenting different types of models given by teachers with different modelling backgrounds. Students will have to analyse the models presented by the teachers and write a report on each model presented.

In a practical assignment students will develop their own very simple model in a group.

Types of instruction

Lectures, group assignments and discussion sessions

Language of instruction

The course is given in English.

Grades

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

Lecture attendance is compulsory (at least 70% of classes).

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

Types of assessment

Group assignments

1. Report on the models presented by guest lecturers. Identify the important concepts and strategies; describe them using the correct modelling terminology; assess the model's purpose, scope, validity, applicability and quality.
2. Develop a simple conceptual model describing a system and design (qualitatively) a modelling strategy. Write a report describing: how the model represents the system conceptually; possible modelling strategies; and the model's scope and limitations. Report and oral presentation.

Course evaluation

The course evaluation is carried out together with the Ph.D. students at the end of the course by individual, anonymous survey followed by an open discussion with the entire class.