FAE3018 Applied Engineering Geology 7.5 credits

Tillämpad Geologi

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for FAE3018 valid from Autumn 2012

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Qualified to postgraduate studies.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

To provide the students with both theoretical and practical knowledge of conceptual models of different geological environments and the ability to carry out computer modeling of the geological environments with respect to flow and transport in both rock and soils.

Course contents

The course consists of two integrated parts, conceptual models of geological environments and computer analysis and modeling, and focus on both soil and bedrock engineering aspects primarily with respect to flow and transport processes.

Part 1: Conceptualization of the geology in terms of stratigraphical, structural and tectonic geological history primarily of Scandinavian. Formulation of geological conceptual models of different glacial terrains. Acquiring structural and stratigraphical geological data as basis for flow and transport processes. Soil and bedrock structure and fabric and its influences on flow with respect to engineering problems. Field measurements of fabric and tectonical elements. Representation of geological elements in both 2D and 3D.

Part 2: Computer analysis of structural and geological data including: statistical distribution of structural elements, discrete-fracture element modeling, concepts of heterogeneity and anisotrophy, influences of rock stresses, continuous approach for flow and transport processes in both rock and soils.

The main idea is that students will be able to apply the knowledge gained in the course directly to their research. The quality of their research results is influenced by their ability to formulate good conceptual geological models of their research study areas and their ability to apply geological measuring and modeling in their research. It is therefore recommended that students take the course within the first two years of the research studies. The content of the course will be modified to suit the prerequisites of the students and their individual needs of engineering geological knowledge.

Disposition

The project will be given every second year. Lectures will be concentrated to two periods of one week each, part 1 starts in August, part 2 starts in second half of October. After each lecture week individual work will follow. The whole course stretches therefore over a period of five month and ends with a final seminar in December. Students from other universities can therefor participate in the course and carry out their project work at their home universities. Mandatory parts are about 9 days within two weeks and a final discussion.

We encourage presenting the project as a part of the student's own research, preferable as a paper or part of a paper. We also encourage cooperation between students.

Language: English.

Course literature

Preferable a textbook will be selected, complemented by course notes and scientific papers.

Examination

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Pass/fail.

Other requirements for final grade

Accepted project work including written and oral presentation.Active participation in scientific discussions and critical reviews. Participation in mandatory field work and computer exercises.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.