UNIVERSITY OF GOTHENBURG

DEPARTMENT OF EARTH SCIENCES

GVG465 Advanced Structural Geology, 7.5 credits

Avancerad strukturgeologi, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Earth Sciences on 2019-06-10 and was last revised on 2021-11-02 to be valid from 2022-01-17, spring semester of 2022.

Field of education: Science 100%
Department: Department of Earth Sciences

Position in the educational system

The course includes 7.5 credits at master's level. The course can be included in a Degree of Master of Science (120 credits) with a major in Earth Sciences. The course is offered as an elective course subject to availability.

The course can be part of the following programme: 1) Master's Programme in Earth Sciences (N2GVS)

Main field of studies	*Specialization*
Earth Sciences	A1N, Second cycle, has only first-cycle course/s as entry requirements

Entry requirements

Admission to the course requires at least 120 credits in successfully completed geology related courses. Also the successful completion of a bachelor's level geology introductory course and a structural geology course of at least 7.5 credits.

Learning outcomes

On successful completion of the course the student will be able to:

Knowledge and understanding

- have an advanced understanding of stress, strain, rheology and deformation, including their quantitative aspects
- recognize moderately complex structures and can relate these to specific deformation regimes
- have an advanced insight into brittle and plastic deformation processes at the microscale and a basic knowledge of D-P-T-t-paths
- have a basic knowledge of ice deformation processes and microstructures
- have a moderate knowledge of gaining advanced structural data from the field

Competence and skills

- quantitatively describe stress and strain
- qualitatively describe conditions for brittle and viscous failure
- plot and interpret advanced structural data sets
- use advanced software to quantify structural geology data sets
- discuss aspects in structural geology and tectonics with respect to the regional geology of Gothenburg and Sweden
- interpret structural geology map from field data

Judgement and approach

- understand and can evaluate structural data from experiments, maps and publications
- can participate in discussion in structural geology and tectonics at a moderate level
- can use advanced software for quantitative evaluation of complex structural data
- can undertake a structural field investigation with moderate complexity

The course is sustainability-related, 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.

Course content

The course examines the deformation of the earth´s lithosphere. The course aims to elucidate advanced theoretical aspects of rock deformation. Besides the quantitative aspects of stress and strain analyses, the broad spectrum of deformation complexities in contractional, extensional and strike-slip regimes at various scales are discussed.

The course provides an in-depth understanding of the rheological properties of the lithosphere, including brittle and plastic deformation processes at the microscale. A focus is also given to the deformation behavior of ice.

Form of teaching

The teaching includes:

- lectures (online and/or on campus) and compulsory exercises,
- laboratory work
- group work
- student presentations
- fieldwork

Lectures (online and/or on campus) are accompanied by a series of practicals, student group work, and student presentations with the objective of implementing, and thereby strengthening, accrued knowledge from the classroom.

Independent assignments may be provided.

Language of instruction: English

Assessment

Advanced Structural Geology Seminar, 3 hp: U/G

Project work (Microstructures, Field Work (optional)), 4.5 hp: U/G/V

A student who has taken two exams in a course or part of a course without obtaining a pass grade is entitled to the nomination of a another examiner. The student needs to contact the department for a new examiner, preferably in writing, and this should be approved by the department unless there are special reasons to the contrary (Chapter 6 Section 22 of the Higher Education Ordinance).

If a student has received a recommendation from the University of Gothenburg for special educational support, where ti is compatible with the learning outcomes of the course and provided that no unreasonable resources are required, the examiner may decide to allow the student to sit an adjusted exam or alternative form of assessment.

In the event that a course has ceased or undergone major changes, students are to be guaranteed at least three examination sessions (including the ordinary examination session) over a period of at least one year, though at most two years after the course has ceased/been changed. The same applies to placements and professional placements (VFU), although this is restricted to just one additional examination session.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).
The grade of the "Advanced Structural Geology Seminar" part is based on a oral presentation.

The grade of the "Project work" part is based on a written report, which is rated between 0-100% (VG>80%).

To pass the course, a student needs to pass both sections of the course with a minimum of G. In order to achieve a VG for the course the students must receive a VG for the "Project work" part.

Course evaluation

The students are given the opportunity to make a written evaluation of the course.

The results of and possible changes to the course will be shared with students who participated in the evaluation and students who are starting the course.

Additional information

The fieldwork could take place under cold, winterly weather conditions, so the students need to have appropriate clothing.