

SYLLABUS

Rock Mechanics 2 7.5 credits Q0028B

Bergmekanik 2

Course syllabus admitted: Spring 2020 Sp 4 - Present

**DECISION DATE
2020-01-16**

Rock Mechanics 2 7.5 credits Q0028B

Bergmekanik 2

First cycle, Q0028B

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Berg- och mineralteknik	Mining and Mineral Technology

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and Rock Mechanics 2

Selection

The selection is based on 1-165 credits.

Examiner

Phillip Tretten

Course Aim

The course aims to give the students good knowledge in Rock Mechanics. The Course focuses mainly on the rock mass, material models, failure criteria's and support and reinforcement. After completed course will the student have a comprehensive knowledge with respect to:

- Which parameters that is important in the interaction of rock mass, loads and strength.
- The behaviour of different failure modes.
- In which way discontinuities affect the stability in the surroundings of underground openings and in slopes.
- Planning and carry out basic pre-investigation.
- Slope stability.
- Foundation on rock.
- Mohr's deformation circles
- Calculate and analyse the stress state in the vicinity of underground openings.
- Calculate and analyse the deformations in the vicinity of underground openings.
- Basic numerical computer programs for stability analyses.
- Rock mechanics laboratory test methods

Contents

The course is divided in to the following parts:

The ground reaction curve, mechanical properties of the rock mass, the loads on the opening and the response of the opening, rock mass acts both as load and load carrier.

Reinforcement, example, history, programme and methods, with respect to rock bolts, net and shotcrete. General information of other reinforcement methods.

Slope stability, basic definition, modes of failure, application of stereographic projection, kinematic and constitutive rules, circular failure, improvements.

Numerical models, basic definition, material models, plasticity, failure representation in the model, input and output, application on underground constructions as well as slopes.

Laboratory tests, methodology, basic laboratory tests, uniaxiell compression strength, point load

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures are given for the theoretical content of the course. The applied part consists of assignments, where the students are able to apply the theoretical knowledge. However there are no scheduled hours for this work but the instructor is always available (web, e-mail, and phone).

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Written examination 5 credits, and a seminar where the student presents his assignment 2.5 credits.

Literature. Valid from Autumn 2013 Sp 2

- Nordlund E, Rådberg G och Sjöberg J (1998). Bergmekanikens Grunder. Upplaga 1.5, 1998. Luleå: LTU.
- Hoek and Brown (1982). Underground Excavation in Rock. Institution for Mining and Metallurgy.

Course offered by

Department of Civil, Environmental and Natural Resources Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Written exam	G U 3 4 5	5	Mandatory	A12	
0002	Oral presentation	U G#	2.5	Mandatory	A12	

Last revised

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2020-01-16

Syllabus established

by Lars Bernspång 2012-04-03