

**SYLLABUS**

# **Rock Mechanics for Technicians 7.5 credits Q0043B**

**Bergmekanik för tekniker**

**Course syllabus admitted: Autumn 2019 Sp 1 - Spring 2020 Sp 3**

**DECISION DATE  
2019-06-14**

# Rock Mechanics for Technicians 7.5 credits Q0043B

## Bergmekanik för tekniker

### First cycle, Q0043B

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 + Mathematics 1a/1b/1c (specific entry A7).

Or:

Mathematics A (specific entry 7)

## Selection

The selection is based on final school grades or Swedish Scholastic Aptitude Test.

## Examiner

Andreas Eitzenberger

## Course Aim

After completing the course the student is able to:

- Make simple scoping calculations of stresses in different load cases
- Select the safety factor for loaded structures
- Calculate the stresses and deformations applied to examples from civil construction industry
- Determine the strike and dip of joints within the rock mass
- Analyze field data from joint mapping
- Explain in situ stresses in bedrock
- Perform rock classifications

## Contents

The first part of the course is strength of materials and deals with tensile, compressive and shear stresses; torsion and bending; buckling; fatigue; notch effect and overall strength. In addition the course covers the basics of Rock Mechanics such as rock mass structures, rock joint mapping, analysis of field data from joint mapping using stereographic projections, the relationship between load (or stress) and displacement (or strain), the mechanical properties of rocks, testing methods, Mohr-Coulomb failure criterion, in-situ stresses and rock classifications.

## Realization

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

Lectures, laboratory and project assignment.

## 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.

Two written exams 3 credits for the part dealing with strength of materials and 2 credits for the part dealing with rock mechanics and in addition project assignment and laboratory assignments 2.5 credits.

Grade for the course as a whole is set after total assessment.

## Remarks

The course overlaps courses and Q0010B Q0023B, B0001T.

## Literature. Valid from Autumn 2016 Sp 1

Lindblom, Ulf. (2010) Bergbyggnad. Stockholm: Liber. (240 s). ISBN 978-91-47-09409-7

Lönnelid, Sture & Norberg, Rune (2009). Grundläggande hållfasthetslära. 4. uppl. Stockholm: Kompendieutgivningen. ISBN: 91-7582-168-0

Lönnelid, Sture & Norberg, Rune (1986). Formelsamling för teknologi och konstruktion M. 4. uppl. Stockholm: Kompendieutgivningen ISBN: 91-7582-098-6

## 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	3	Mandatory	A14	
0002	Written exam	G U 3 4 5	2	Mandatory	A14	
0003	Project work, laboratory work	U G#	2.5	Mandatory	A14	

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Last revised

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2019-06-14

# Syllabus established

by Eva Gunneriusson 2014-02-10