SYLLABUS

Petrology and regional geology 7.5 credits O7019K

Petrologi och regional geologi

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2021-02-17

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LULEÅ TEKNISKA UNIVERSITET

Petrology and regional geology 7.5 credits O7019K

Petrologi och regional geologi

Second cycle, O7019K

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Malmgeologi	Earth Science and Physical Geography

Main field of study

Chemical Engineering

Entry requirements

90 credits in Geoscience.

Selection

The selection is based on 30-285 credits

Course Aim

After completing the course, the student should have knowledge and understanding of:
- rock-forming processes in a plate tectonic perspective.
- how the mineralogy and chemistry of magmatic rocks is linked to the origin and development of the magma.
- how main and trace elements, as well as isotopes and phase diagrams can be used for classification and petrogenetic analysis.
- depositional environments for sedimentary rocks and different types of sedimentation basins.
- metamorphic processes, metamorphic facies and PT-determination.
- the Fennoscandian Shield in a plate tectonic perspective.

Contents

Modal and normative mineralogy, CIPW norm.
Classification of magmatic rocks and tectonic environment.
The phase rule, phase diagram. Two-component and three-component diagrams as petrogenetic tools.
Melting processes, fractionation and crystallization of magma.
Radiogenic isotopes and petrogenes.
Magmatic environments: mantle plumes, spreading ridges, subduction zones.
Alkali rocks
Sedimentary environments and sedimentary facies.
Basin development in relation to plate tectonic environment.
Metamorphic mineral associations, metamorphic mineral reactions and equilibrium.
Metamorphic facies
Geothermometers and geobarometers.
Regional geology – The Fennoscandian Shield in a plate tectonic perspective.

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
Lectures where basic theory is presented and explained and compulsory exercises with written reports linked to the theoretical content. Project work with oral and written presentation including a critical review of scientific articles presenting plate tectonic models for the Fennoscandian Shield.

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 exam and project work with graded grade and approved exercises.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term “unauthorized aids” refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Course offered by

Department of Civil, Environmental and Natural Resources Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0006	Project work	G U 3 4 5	1.5	Mandatory	A12	
0007	Written exam	G U 3 4 5	5.5	Mandatory	A13	
0008	Exercises	U G#	0.5	Mandatory	A13	

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 2021-02-17

Syllabus established

by Eva Gunneriusson 2011-02-04