SYLLABUS

Geoscience 7.5 credits O0041K

Geovetenskap

Course syllabus admitted: Autumn 2023 Sp 1 - Spring 2024 Sp 4

DECISION DATE
2023-02-13

Luleå University of Technology 971 87 Luleå, Sweden
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LULEÅ TEKNISKA UNIVERSITET

Geoscience 7.5 credits O0041K

Geovetenskap

First cycle, O0041K

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

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 +
Swedish upper secondary school courses Physics 2, Chemistry 1, Mathematics 4 or Mathematics E.

Selection

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

Course Aim

The course provides basic knowledge in geoscience with a focus on fundamental geological processes.
After completing the course, participants should be able to:

Knowledge and understanding
1. Explain basic geoscientific concepts and processes, that are important to understand mechanisms that control large geological systems.
2. Describe the hydrological cycle, generation of soil, and exogenic processes.
3. Describe fundamental aspects of economic geology, including mineral deposits, mineral exploration, and mine waste.
4. Demonstrate the ability to apply knowledge acquired in the course to solve geoscientific problems in groups.

Competence and skills
5. Be able to recognize and describe common minerals, rock types and soils, and to explain their origins.
6. Demonstrate the ability to search, compile, critically interpret, and orally present and discuss geoscientific information with different audiences.
7. Be able to contextualize theory by constructing geoscientific hypotheses based on data and to defend the scientific validity of the hypotheses based on the course literature.

Judgment and approach
8. Demonstrate insight into the role of geoscience in today´s society.

Contents

This introduction to geoscience includes theoretical and practical elements. The course covers:
• Origin, composition and internal structure of the Earth, including petrophysical properties and the origin of elements.
• Plate tectonics and mountain-building processes.
• Minerals and rock forming processes, including magmatic, sedimentary, and metamorphic rocks.
• Hydrological cycle and exogenic processes, including regolith origin and properties.
• The geological time scale, earth history and evolution, including geology of Sweden and anthropogenic impacts.
• Construction and interpretation of maps, geographic information systems.
• Economic geology, mineral deposits, and mine waste.

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
The course is given in English and consists of lectures where basic theory is presented and explained. Theoretical knowledge translates into practical applications and increased understanding through practical exercises, peer-reviews, group discussions, problem-based seminars, and field excursions. Assignments with applications of methods taught in the course M0047M are given. Compulsory parts are two out of three seminars, presentations of individual exercises, field excursions, and practical and written exams. Feedback will be given on the seminars, oral presentations, and individual exercises.

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.
The intended learning outcomes of the course are assessed by five different assessments:

Goals/ILOs of the course are assessed through five different assessments including seminars and presentations, individual exercises and presentations, field excursions, practical and written exams.

1. Seminars and oral presentations assess ILOs 1, 2, 3, 4, 5, 6, 7, 8
2. Individual exercises and presentations assess ILOs 1, 2, 3, 7
3. Field excursions assess ILOs 1, 2, 3, 5, 8
4. Practical exams assess ILO 5
5. Written exam assesses ILOs 1, 2, 3, 7, 8

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	Seminars and presentations	U G#	2	Mandatory	A23	
0007	Individual exercises and presentations	U G#	2	Mandatory	A23	
0008	Field excursion	U G#	0.2	Mandatory	A23	
0009	Practical exams	G U 3 4 5	1.3	Mandatory	A23	
0010	Written exam	G U 3 4 5	2	Mandatory	A23	

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 2023-02-13

Syllabus established

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2022-02-11