

SYLLABUS

STUDY YEAR 2024/2025

Master programme in Exploration Geoscience

Enrollment semester Autumn 2024

DATE

2023-10-25

REFERENCE NO.

LTU-4492-2023

DECISION MAKER

Dean of the Faculty of Science and Technology

Programme content and structure

The program, which is international and taught entirely in English, provides students with the opportunity to train in advanced geoscience for exploration that is critical to meeting the future needs of metals and minerals and its role in the industrial transition to renewable energy sources.

The program begins with courses of a more comprehensive nature such as Geosciences for Exploration, Applied Petrology and Geology in the Arctic. After that, the courses become more focused and cover, for example, topics such as ore genesis, structural geology and how GIS information and geodata (including artificial intelligence and machine learning) are used in advanced modeling of ore systems. The final year of the program covers topics such as exploration methods and mining geology, and is finalized with two project courses, the last of which is the students' MSc degree project, which is usually carried out together with a company. This, together with the fact that several course modules can be carried out within the unique test bed Arctic Tests, which is an LTU-integrated part in active mining operations in northern Sweden, gives the students good opportunities to network with future employers.

Between year 1 and year 2, a field-based summer course of 3 credits is offered where the industry participates with expertise and which is carried out in northern Sweden, in one of Europe's most important ore districts. The course is not included in the degree and can be taken in addition to compulsory courses in the education.

The program offers a beginner's course in Swedish (3 credits) for foreign students. The course is not included in the degree and is taken in addition to mandatory courses in the program.

Credits

120 credits

Degree

- Degree of Master of Science (120 credits) - Major; Geosciences with specialisation Exploration Geoscience

Specialisations

Profile

- Timrex
- Without specialisation

Entry requirements

Bachelors degree of minimum 180 ECTS with at least 60 ECTS in the area of nature resource technology, geology or geoscience. Good knowledge in English, equivalent to English 6

Selection

The selection procedure is based on academic qualifications, quality and quantity aspects

Selection group

Academic: 100%

Compulsory courses

Compulsory courses 52.5 credits

Course code	Course	Cr	Level	Comment
New	Degree Project in Geosciences, Master	30	Master's level	
L7017K	Geochemical Exploration	7.5	Master's level	
O7018K	Exploration	7.5	Master's level	
O7022K	Mining Geology	7.5	Master's level	

Profile: Timrex

Compulsory courses 67.5 credits

Course code	Course	Cr	Level	Comment
O7016K	Senior Design Project in Ore Geology	7.5	Master's level	
	Courses given by the University of Miskolc	60		

Course offered outside the obligatory courses - not compulsory - For non Scandinavian students

Course code	Course	Cr	Level	Comment
S0046P	Swedish for International Students 1	3	Bachelor's level	Selectable

Profile: Without specialisation

Compulsory courses 52.5 credits

Course code	Course	Cr	Level	Comment
O7007K	Exploration and Environmental Geophysics	7.5	Master's level	
O7009K	Ore Genetic Models	7.5	Master's level	
O7021K	GIS in Geoscience	7.5	Master's level	
O7024K	Geology of the Arctic	7.5	Master's level	
O7026K	Exploration Geoscience	7.5	Master's level	
O7027K	Applied Petrology	7.5	Master's level	
O7028K	Geodata - from analysis to model	7.5	Master's level	

Electable courses 15 credits

Selective space is 15 credits. It is mandatory to select elective courses up to the given number of credits. The given number of credits of elective courses listed must be met for degree.

Course code	Course	Cr	Level	Comment
O7001K	Senior Design Project in Applied Geophysics	7.5	Master's level	Selectable
O7008K	Quantitative Interpretation of Geophysical Data	7.5	Master's level	Selectable
O7016K	Senior Design Project in Ore Geology	7.5	Master's level	Selectable
O7029K	Applied Structural Geology	7.5	Master's level	Selectable

Course offered outside the obligatory courses - not compulsory - For non Scandinavian students 3 credits

Selective space is 3 credits. It is mandatory to select elective courses up to the given number of credits. The given number of credits of elective courses listed must be met for degree.

Course code	Course	Cr	Level	Comment
S0046P	Swedish for International Students 1	3	Bachelor's level	Selectable

Study schedule

Profile: Timrex

Year of study 1 Enrollment semester Autumn 2024, Is offered in 2024/2025

Study-period	Course code	Course	Cr	Comment
1-4		Courses given by the University of Miskolc	60	

Year of study 2 Enrollment semester Autumn 2024, Is offered in 2025/2026, planned study schedule

Study-period	Course code	Course	Cr	Comment
1	L7017K	Geochemical Exploration	7.5	
1	O7018K	Exploration	7.5	
1	S0046P	Swedish for International Students 1	3	Selectable
2	O7016K	Senior Design Project in Ore Geology	7.5	
2	O7022K	Mining Geology	7.5	
3-4	New	Degree Project in Geosciences, Master	30	

Profile: Without specialisation

Year of study 1 Enrollment semester Autumn 2024, Is offered in 2024/2025

Study-period	Course code	Course	Cr	Comment
1	O7007K	Exploration and Environmental Geophysics	7.5	
1	O7026K	Exploration Geoscience	7.5	
1	S0046P	Swedish for International Students 1	3	Selectable
2	O7024K	Geology of the Arctic	7.5	
2	O7027K	Applied Petrology	7.5	
3	O7009K	Ore Genetic Models	7.5	
3	O7021K	GIS in Geoscience	7.5	
4	O7008K	Quantitative Interpretation of Geophysical Data	7.5	Selectable
4	O7028K	Geodata - from analysis to model	7.5	
4	O7029K	Applied Structural Geology	7.5	Selectable

Year of study 2 Enrollment semester Autumn 2024, Is offered in 2025/2026, planned study schedule

Study-period	Course code	Course	Cr	Comment
1	L7017K	Geochemical Exploration	7.5	
1	O7018K	Exploration	7.5	
2	O7001K	Senior Design Project in Applied Geophysics	7.5	Selectable
2	O7016K	Senior Design Project in Ore Geology	7.5	Selectable
2	O7022K	Mining Geology	7.5	
3-4	New	Degree Project in Geosciences, Master	30	