

SYLLABUS

Introduction to the Mining Value Chain 7.5 credits M7010K

Introduktion till gruvvärdekedjan

Course syllabus admitted: Autumn 2021 Sp 1 - Spring 2023 Sp 4

**DECISION DATE
2021-02-17**

Introduction to the Mining Value Chain 7.5 credits M7010K

Introduktion till gruvvärdekedjan

Second cycle, M7010K

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Mineralteknik	Chemical Engineering

Entry requirements

60 ECTS in geoscience, mining engineering, process engineering or equivalent areas or equivalent knowledge from practical experiences (min 5 years).

Good knowledge in English, equivalent to English B/6.

Selection

The selection is based on 30-285 credits

Examiner

Jan Rosenkranz

Course Aim

The course aims to create knowledge and understanding of the various parts of the mining value chain, as well as to be able to critically examine related environmental, social and economic impacts.

After completing the course, the student shall be able to:

- Know and explain the concept of sustainable development in connection with the mining and mineral industry
- Describe and explain different exploration methods and methods for economic valuation of ore and mineral deposits
- Describe and explain common techniques and processes used in mining, beneficiation and extraction
- Give examples of the mining operations' environmental impact

Contents

The mining and mineral industry from a sustainability perspective

- Climate-driven sustainability challenges
- Minerals and metals for the needs of society
- Mine life cycle, from development to restoration

Occurrence and availability of ore and minerals

- Exploration methods
- Sampling, mapping and ore estimation

Mining of ores

- Mining methods
- Mine designs for surface and underground mining

Mineral processing and extractive metallurgy

- Characterization of ore minerals and metallurgical products
- Basic principles and unit operations for ore beneficiation and metal extraction

Mines and environmental impact

- Environmental legislation
- Handling and disposal of mine waste, processing rejects and mine water
- Long-term impacts and remediation

Feasibility and economic prerequisites

Realization

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

The teaching consists of lectures that are combined with assignments and a course portfolio, seminars and study visit. Lectures will give the students an understanding of the different steps of the value chain and the opportunity to examine the development of mining projects from a sustainability perspective.

The assignments train the student to independently work with and deepen selected sub-areas. The course portfolio shall provide the opportunity to document and reflect on the own development and learning.

Seminars are devoted to in the group describing, analyzing, interpreting and presenting a complex theme along the mining value chain.

Teaching includes lessons with a presentation by teachers from the partner universities DTU and OU (classroom teaching or distance learning).

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.

Assignments as well as course portfolio, seminars and study trips are mandatory. Assignments, course portfolio and seminars are assessed with grades in these parts. The total score production gives the total grade for the course, which is given at a grade scale of 3 4 5.

Mandatory attendance at the first lesson.

Literature. Valid from Autumn 2021 Sp 1

Compendium from the Department of Civil, Environmental and Natural Resources Engineering.

Course offered by

Department of Civil, Environmental and Natural Resources Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Assignments and course portfolio	G U 3 4 5	4	Mandatory	A21	
0002	Seminars	G U 3 4 5	3	Mandatory	A21	
0003	Study trip	U G#	0.5	Mandatory	A21	

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.

Syllabus established

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2021-02-17