

SYLLABUS

Mine Waste 7.5 credits

L7016K

Gruvavfall

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2022-02-11

Mine Waste 7.5 credits L7016K

Gruvavfall

Second cycle, L7016K

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

Main field of study

Natural Resources Engineering, Geosciences

Entry requirements

90 credits in Geosciences, including the course L0047K Environmental Geochemistry or equivalent. Good knowledge in English, equivalent to English B/6.

Selection

The selection is based on 30-285 credits

Course Aim

After completing the course participants should be able to

Knowledge and understanding

- describe and explain the main types of mine waste and geochemical reactions and processes that are important in a mine waste context
- description and explain different technical strategies and solutions used in the management of mine waste and leachate

Competence and skills/ Judgement and approach

apply geochemical principles and processes to analyze technical strategies and solutions to realistic cases where the engineer's role and responsibility for sustainable development are emphasized

Process, analyze and visualize geochemical field data

Contents

The course covers different types of mine waste generated during the mining operation and different geochemical compositions and properties to understand principal reactions and processes occurring in the waste and during leachate formation. An important part of the course is geochemical prediction of potential environmental risks for various mine waste in order to be able to plan, implement and evaluate sustainable waste and water management. The course also deals with passive and active water purification processes, preventive measures to prevent environmental risks and post-treatment methods.

Realization

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

A written quiz is conducted with the aim to check what prior knowledge the students have acquired from previous courses.

- The teaching consists of a number of lectures that include classroom exercises and group discussions based on scientific articles with the aim to stimulating discussions about, how and when environmental risks arise and how to prevent them.

- A project work are performed in group with aim to process, discuss, analyse and visualise geochemical field data that are presented to stakeholders.

-Open questions based on scientific articles are discussed and analysed in groups and presented orally and individually at a seminar.

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 course is assessed through

Exercises 0018: Two exercises that aim to understand basic geochemical processes and principles in mine waste and leachate (LOI 1) are examined with written report with grading (U/G).

Written examination (0015) on basic description and explanation of geochemical principles and processes typical for mine waste and leachate, and strategies for addressing and/or preventing environmental risks in the management of mine waste and leachate (LOI 1 + 2). Grading according to grading scale (G U 3 4 5).

Seminar 0016: Analyses and application of technical strategies for minimizing environmental risks (LOI 3) based on scientific articles are examined orally in a seminar graded (U/G).

Project work 0017: For deeper understanding of basic processes, geochemical field data is processed, discussed, analysed and visualized, and appropriate measures are discussed based on scientific literature (LOI 3 + 4). This is examined with written report and oral presentation to stakeholders and graded by (U/G).

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.

Overlap

The course L7016K is equal to KGL011

Course offered by

Department of Civil, Environmental and Natural Resources Engineering

Modules

| Code | Description | Grade scale | Cr | Status | From period | Title |
|------|--------------|-------------|-----|-----------|-------------|-------|
| 0015 | Written exam | G U 3 4 5 | 3 | Mandatory | S19 | |
| 0019 | Seminar | U G# | 2.5 | Mandatory | A21 | |
| 0020 | Project work | U G# | 1 | Mandatory | A21 | |
| 0021 | Assignments | U G# | 1 | 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.

Last revised

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

Syllabus established

by the Department of Chemical Engineering and Geosciences 2007-02-28