GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Critical Metals and Minerals (I002197)

Course size *(nominal values; actual values may depend on programme)*

Credits 5.0 **Study time 150 h**

Course offerings in academic year 2026-2027

A (semester 1) English Gent

Lecturers in academic year 2026-2027

Jonsson, Erik UPPSALO1 lecturer-in-charge

Offered in the following programmes in 2026-2027	crdts	offering
International Master of Science in Sustainable and Innovative Natural Resource Management	5	A

Teaching languages

English

Keywords

Position of the course

This course provides an overview of the principles of classification and assessment of critical metals and minerals and their application globally, and specifically within the EU. The "peak metal" concept will feature. The supply of critical metals and minerals will be discussed. The mineralogy of critical metals, the metallogenetic context of present and near-future deposit types for critical metals and minerals, as well as deposit classification and distribution, will be covered. Problems surrounding substitution and recycling potential will be discussed.

Contents

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Individual student projects are focused on certain types of critical metal and mineral deposits, their character and origin, and include evaluating their present and future potential.

Initial competences

90 credits in science/engineering (physics, chemistry, biology, mathematics, earth sciences, computer science, material science) including 15 credits in mathematics or physics and 10 credits in chemistry.
Proficiency in English equivalent to the Swedish upper secondary course English 6.

Final competences

1 On completion of the course, the student should be able to:
- describe the background of the concept of critical metals and minerals, and their selection as such within an EU perspective

2 • describe the most important critical metal minerals, key metallogenetic processes responsible for the formation of deposits of critical metals and minerals, and their geological context

3 • evaluate geological constraints on global critical metal and

mineral supply responses

4 • explain the demand and applications for these metals, and motivate their exploration and mining in a European context

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Lecture, Practical, Independent work

Extra information on the teaching methods

Lectures, individual project work, seminars, practicals, literature studies.

Study material

None

References

- Lecture hand-outs and selected articles/literature, Institutionen för geovetenskaper
- Gunn, Gus, Critical Metals Handbook, John Wiley & Sons, 2014 (Not mandatory, but good reference literature.)

Course content-related study coaching

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Written assessment, Assignment

Examination methods in case of periodic assessment during the second examination period

Written assessment, Assignment

Examination methods in case of permanent assessment

Participation, Presentation

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

Written and oral presentations of an individual project (2 credits), active participation/feedback during seminars (1 credit), and a home-exam (2 credits).

If there are special reasons for doing so, an examiner may make an exception from the method of assessment indicated and allow a student to be assessed by another method. An example of special reasons might be a certificate regarding special pedagogical support from the disability coordinator of the university.

Calculation of the examination mark