

## Physical–Chemical Properties of Rocks, Minerals and Materials (I002195)

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

**Credits** 5.0 **Study time** 150 h

**Course offerings in academic year 2023-2024**

A (semester 2) English Gent

**Lecturers in academic year 2023-2024**

Malehmir, Alireza

UPPSAL01 lecturer-in-charge

**Offered in the following programmes in 2023-2024**

[International Master of Science in Sustainable and Innovative Natural Resource Management](#)

**crdts** 5 **offering** A

**Teaching languages**

English

**Keywords**

**Position of the course**

**Contents**

This course is divided into physical and chemical properties. Physical properties include an introduction on rocks and minerals, density, porosity, permeability, elastic and inelastic properties, rock quality and seismic properties, magnetic electric and thermal properties of rocks, in-situ and downhole physical property measurements. Chemical properties include mineral and material structures, composition and alloying, thermodynamics of minerals and materials, investigation of chemical properties by analytical methods.

**Initial competences**

**Final competences**

- 1 able to: Describe relationships between different physical and chemical properties.
- 2 able to: Compare different types of minerals and rocks and their physical and chemical properties.
- 3 able to: Formulate different systems of symmetries and anisotropic systems associated with each system.
- 4 able to: Relate scale dependencies between various measurements (lab, field and/or downhole).
- 5 able to: Design suitable geophysical and laboratory methods for the exploration and/or processing of a given mineral.

**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, seminars, solving exercises (homework and computer lab work) and lab and field measurements.

**Learning materials and price**

**References**

**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**

Oral assessment, Assignment

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

Oral assessment, Assignment

**Examination methods in case of permanent assessment**

Oral assessment, Assignment

**Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible in modified form

**Extra information on the examination methods**

Written examination, homework assignments, computer projects and written report.

**Calculation of the examination mark**

Written examination (50 %)

Homework assignments, computer projects and written report (50%)