

Chemical Principles and Sustainable Technologies along the Raw Materials Value Chain (1003018)

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

Credits 13.0

Study time 390 h

Course offerings in academic year 2024-2025

A (Year)

English

Gent

Lecturers in academic year 2024-2025

Frisch, Gero

FREIBE01

lecturer-in-charge

Offered in the following programmes in 2024-2025

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

crdts

13

offering

A

Teaching languages

English

Keywords

Position of the course

Contents

Theoretical and practical aspects of

- raw materials analysis and process analysis techniques,
- raw materials processing and recycling technologies, including mechanical, hydro-, pyro- and electrometallurgical methods,
- chemistry of minerals and ore deposits, modelling of chemical equilibria and kinetics
- process chain design, circular economy and process economics in the raw materials sector

Initial competences

Final competences

- 1 Upon completion of this module, students should be able to
 - apply fundamental chemical concepts to modern raw materials analysis, extraction, purification, and production techniques,
- 2 • analyse how different disciplines and technologies must interact to design a process in the raw materials sector,
- 3 • be able to propose an appropriate technology to process a given resource,
- 4 • discuss and design innovative solutions to current industry challenges, including aspects of circular economy and entrepreneurship.

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

Group work, Seminar, Excursion, Lecture, Practical, Independent work

Study material

None

References

J.S. Gaffney et al., General Chemistry for Engineers, Elsevier 2018
D. Möller, Chemistry for Environmental Scientists, De Gruyter 2015
M. Bertau et al., Industrial Chemistry, Wiley, 2016
Kirk-Othmer et al., Chemical Technology, Wiley, 2013

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

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

Written assessment

Examination methods in case of permanent assessment

Participation, Written assessment

Possibilities of retake in case of permanent assessment

not applicable

Calculation of the examination mark

For the award of credit points it is necessary to pass the module exam.

The module exam contains:

KA*: written exam [180 min]

AP*: case studies

AP*: practicals

PVL*: fundamental chemistry workshops

PVL have to be satisfied before the examination.

* In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.