GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2023-2024

Exploration and Environmental Geophysics (I002198)

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

Credits 15.0 **Study time 450 h**

Course offerings in academic year 2023-2024

A (semester 1)	English	Gent

Lecturers in academic year 2023-2024

Malehmir, Alireza	UPPSALO1	lecturer-in-charge

Offered in the following programmes in 2023-2024	**crdts**	**offering**
International Master of Science in Sustainable and Innovative Natural Resource Management	15	A

Teaching languages

English

Keywords

Position of the course

Contents

The seismic reflection method, the seismic refraction method, gravity measurements, magnetization and magnetic measurements, electrical methods, electromagnetic methods including ground penetrating radar, radiometric methods, borehole logging, petrophysics, geophysical field techniques, geophysical modelling and interpretation, field course.

Initial competences

60 credits in mathematics and physics, or 60 credits in earth science and 15 credits in mathematics. Proficiency in English equivalent to the Swedish upper secondary course English 6.

Final competences

1 Explain the physical principles governing the propagation of seismic waves, describe and apply the principles of seismic data acquisition and have a broad understanding of the instruments used in the field.
2 Interpret a seismic section and identify different seismic phases.
3 Describe the basic processing steps of reflection seismic data.
4 Derive a model of the subsurface based on refraction seismic data.
5 Be able to make gravity measurements and calculate Free-air and Bouguer anomalies and interpret gravity data.
6 Describe the common types of magnetization, understand how a Proton and a Cesium Vapour magnetometer works, and interpret magnetic data.
7 Describe the different electrical and electromagnetic methods and how they relate to electrical conductivity and dielectric permitivity.
8 Compare different geophysical methods, describe their weaknesses, strengths, and applicability to different problems and geological environments.

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

Lecture, seminar

Extra information on the teaching methods

The course consists of lectures, seminars, exercises, computer exercises and a compulsory field course. Participation in computer exercises, field course and associated lectures is mandatory.

Learning materials and price

References

Course content-related study coaching

Evaluation methods

end-of-term assessment

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

Assignment, written assessment

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

Assignment, written assessment

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

The written examination corresponds to 7 credits and the compulsory part to 8 credits, of which 3 credits for the field course and 5 credits for the computer exercises.

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