



ALMA MATER STUDIORUM  
UNIVERSITA DI BOLOGNA



Norwegian University of  
Science and Technology



GTK: GEOLOGICAL SURVEY  
OF FINLAND



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# MINERAL, ENGINEERING AND ENVIRONMENTAL GEOPHYSICS

## Raw Materials Exploration and Sustainability

### CONTACT INFORMATION

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**Course Webpage:** <https://www.ntnu.edu/studies/courses/TPG4120/2019#tab=omEmnet>

### COURSE CONTENT AND INTENDED LEARNING OUTCOMES (ILOs):

Seismic methods (refraction and reflection), electrical methods (profiling, vertical sounding and 2D (3D) measurements), electromagnetic methods (FEM, VLF, TEM), georadar, radiometry and well logging. The lectures are limited to the topics which are relevant to mineral, engineering and environmental exploration.

The students should understand that basic physics laws may be exploited in a variety of disciplines. They shall have an overview over possibilities and limitations of the geophysical methods used in engineering, hydrogeological, geotechnical and environmental studies. Understanding of possibilities and limitations for different geophysical methods used in mineralogical, engineering geological, hydrogeological, geotechnical and environmental investigations.

The students will be capable of deriving basic geophysical equations. They will also be able to perform simple geophysical computations and know how to do geological interpretations based on geophysical data.

### Aligning with the EIT OLOs:

- EIT OLO 1 - Making value judgments and sustainability competencies
- EIT OLO 2 - Entrepreneurship skills and competencies
- EIT OLO 3 - Creativity skills and competencies
- EIT OLO 4 - Innovation skills and competencies
- EIT OLO 5 - Research skills and competencies
- EIT OLO 6 - Intellectual transforming skills and competencies
- EIT OLO 7 - Leadership skills and competencies

### ASSESSMENT METHODS AND GRADING SYSTEM

Lectures, field measurements/field demonstrations, compulsory exercises (interpretations included reporting).

Please note that this information is subject to change. Refer to the online version for any updates.



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Portfolio assessment is the basis for the grade in the course. The portfolio includes a final oral exam (75%) and evaluation of compulsory exercises (25%). The results for the parts are given in %-scores, while the entire portfolio is assigned a letter grade.

Different assessment methods will be used to evaluate the students: content-based, competence-based and impact-based assessments. Content-based assessment refers to assessment tasks that mainly ask the learner about facts. Competence-based assessment refers to assessment of intended learning outcomes that ask the learner to show ability to also use these facts. Impact-based assessments take the assessment of competencies one step further and ask the learner to use these competencies in a real-life situation to create a change or solve a challenge.

*You can find below the breakdown of the final grade:*

ASSESSMENT METHOD	WEIGHT ON FINAL GRADE
Portfolio assessment: compulsory exercises (interpretations included reporting)	25%
Portfolio assessment: oral exam	75%

## COURSE SESSIONS

TBD

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