



MINING GEOLOGY

Prof. C WANHAINEN

Work load: 45 h lectures and 30 h exercises and project work

Number of credits: 7.5ECTS

Course code: O7011K

Source: <http://www.emerald.ulg.ac.be/?q=mining-geology>

► *Objectives and Intended learning outcomes:*

The course concerns exploration and evaluation of important types of ore and mineral deposits as well as preparation for and follow-up of exploitation.

After the course the student shall be able to:

- Conduct underground mapping and drill core logging,
- Calculate reserve estimation, cut off, average grade and weighted average for winning of mineral resources,
- Describe and explain content of common stages in different feasibility studies,
- Generalise the knowledge of a project to different reporting standards.

► *Contribution to EIT's Overarching Learning Outcomes*

Above listed ILOs cover the **EIT Overarching Learning Outcomes: 5 and 6.**

Through the use of 3D geo-modelling tools for targeting mineral exploration, research skills and competencies are trained. Field trips to mine sites for geological mapping contribute to building intellectual transforming skills and competencies.

► *Contents:*

- Underground mapping
- Diamond drilling programs.
- Logging and assaying, grade control.
- Ore reserve estimation, cut off, average grade and weighted average.
- Grade and tonnage estimations in profiles.
- Block models.
- Work with 3D representation of drill hole data in common software.
- Feasibility studies.
- Reporting standards.
- Geometallurgy.

► *Literature:*



Evans, Whateley & Moon. Introduction to Mineral Exploration, Blackwell, 2006

► *Realization:*

Lectures, practicals, drill core logging, underground mapping and project work. Computer work with drill core data and ore reserve estimations.

► *Assessment method:*

In the assessment of the student, three different methods are used: content based, competence based, and impact based. They corresponds to grades 3, 4 and 5 respectively as described under Exam.

► *Exam:*

Project work and written examination at the end of the course.

- For grade 3, the student must be able to plan and conduct a routine underground and drill core logging. The student must be able to collect and organize relevant data.
- For grade 4 the student must be able to calculate and evaluate reserve estimations provided by different techniques and to report the results.
- For grade 5, the student must be able to apply the acquired skills to interpret, report and present the results and to defend the conclusions.

► *Items/credits*

Number	Type	Credits	Grade
0001	Written exam	4.0	U 3 4 5
0002	Project work	2.5	U 3 4 5
0003	Exercises	1.0	U G