GEOMETALLURGY

Assoc. Prof. Y GHORBANI

Work load: 30 h lectures and PC classes with assignments (attending a serious game), 20 h laboratory work, 16 h seminars
Number of credits: 7.5ECTS
Course code: M7008K
Source: http://www.emerald.ulg.ac.be/?q=geometallurgy

► *Objectives and Intended learning outcomes:*

The objective is to enable students after completion of the course to:

1) Describe the principles of different areas of geometallurgy (ore geology, process mineralogy, minerals processing, modelling and simulation) and how they are linked in a geometallurgical concept.
2) Use different research and analytical methods of importance for geometallurgy and interpret the results.
3) Evaluate, analyze and interpret the geometallurgical data in a quantitative way.
4) Design a geometallurgical sampling, analysis and research campaign.
5) Design a geometallurgical program.

► *Contribution to EIT's Overarching Learning Outcomes*

Above listed ILOs cover the **EIT Overarching Learning Outcomes: 1, 4, 5 and 6**:

Linking ore geology, mineral processing and simulation for data treatment customization contributes to making value judgements and developing sustainability competencies. By constructing a model with different types of geological and metallurgical data for simulation and prediction, the research skills and competencies are trained. Intellectual transforming skills and competencies are taught in group projects by solving possible realistic processing problems. Through integration of multiple data and process models for resource efficiency optimization, the innovation skills and competencies are addressed.

► *Contents:*

The course will give an introduction to main parts of the geometallurgy: 1) ore geology, 2) geostatistics, 3) process mineralogy, 4) minerals processing and 5) modeling and simulation. The main focus is put in process mineralogy, mineral processing and in assimilating the geometallurgical concept. Exercises, assignments and seminars concentrate on practical aspects of geometallurgy needed in mining industry.

► *Mode of delivery:*

Lectures, PC lessons, assignments, laboratory classes, attending in a serious game and seminars.

► *Literature:*

Petruk, W., 2000. Applied Mineralogy in the Mining Industry, Elsevier Science B.V., Amsterdam.
Will, B. & Napier-Munn, T., 2006. Wills' Mineral Processing Technology, Elsevier Science & Technology Books, ISBN: 0750644508.

► *Prerequisites:*

Completion of the following course: Ore geology, mineralogy

► *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:*

Laboratory classes, participation of the game, geometallurgical investigations (for the seminar) and the seminars are compulsory. Laboratory reports, seminars, the investigation and the opposition are each awarded points based on the attained level.

Assignments and reports must be delivered in time or there will be an automatic deduction of points. The total point production determines the grade of the course, and it is given on the scale Fail, 3, 4 or 5.

- For grade 3, the student must be able to describe different parts and procedures of geometallurgy, and to conduct a routine geometallurgical analysis. The student must be able to collect geometallurgical data and perform an analysis with interpretation.
- For grade 4 the student must be able to evaluate and interpret geometallurgical data provided by different analytical and research techniques and to report the results. The student must be able to design a geometallurgical campaign, interpret the result and establish a geometallurgical program.
- For grade 5, the student must be able to apply the acquired skills to a new geometallurgical case, interpret, report and present the results and to defend the conclusions.

► *Items/credits*

Number	Type	Credits	Grade
0001	Lab exercises and assignments	4.0	U G
0002	Seminars	3.5	U 3 4 5