

Production of metals

Titulaire

Annick HUBIN (Coordonnateur)

Mnémonique du cours

CHIM-H417

Crédits ECTS

3 crédits

Langue(s) d'enseignement

Anglais

Période du cours

Deuxième quadrimestre

Campus

Solbosch et Plaine

Contenu du cours

The course combines all unit operations of extractive metallurgy and recycling. In order to gain comprehensive insight in extractive metallurgy and recycling, the basic principles of pyro-, hydro- and electrometallurgy are applied to the production/recycling of the main metals. In order to acquire the ability to select an adequate processing scheme, a number of metals is studied that can, depending on the conditions, be produced/recycled following different routes. The students will do this in small teams, in the format of guided self study. The students are also familiarized with the industrial aspects (compulsory company visits with guided tours along the industrial installations).

Objectifs (et/ou acquis d'apprentissages spécifiques)

The aim of the course is that students gain insight into extractive metallurgy and recycling. It is a continuation and extension of the bachelor courses. The scope is broadened towards all extractive / recycling processes and their technological characteristics, with special attention for the comparison of different processes. Based on the knowledge of (1) transport phenomena and (2) the relevant unit operations, the student is expected to understand (1) the set up of the global process and (2) the selection of the reactors. Also the process determining parameters need to be known. Finally the student should demonstrate the ability to select a processing route, based on incomplete data on the metal in question.

Méthodes d'enseignement et activités d'apprentissages

Self guided study.
visits of industrial sites.

Contribution au profil d'enseignement

This teaching unit contributes to the following competences:

- > In-depth knowledge and understanding of exact sciences with the specificity of their application to engineering
- > The flexibility and adaptability to work in an international and/or intercultural context
- > An integrated insight in chemical process and materials' technology
- > Insight in chemistry as a link between process and materials technology

Support(s) de cours

Université virtuelle

Autres renseignements

Lieu(x) d'enseignement

Plaine et Solbosch

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Méthode(s) d'évaluation

Autre

Méthode(s) d'évaluation (complément)

1st session

The evaluation is based on permanent evaluation during the sessions. At the end of the course, the student teams present their work through a presentation containing two parts (1) report of one of the company visits, completed with additional information regarding the processes used, (2) discussion of 3 aspects of the processing of a metal (choice subject to approval) : primary production from ores, recycling and new processes under development. The presentation is followed by a Q&A session and discussion. By preference, the final mark is a mark for the team. Only if during the quadrimester the team members contributions are very unequal individual marks will be given. 20% of the mark is on permanent evaluation, 80% on the presentation and Q&A

2d session

the candidate will receive an individual assignment : discussion of two aspects of the processing of a metal (one not treated by one of the teams in first session). 100% of the mark is based on the presentation and Q&A.

Construction de la note (en ce compris, la pondération des notes partielles)

1st session

20% of the mark is on permanent evaluation, 80% on the presentation and Q&A?

2d session

100% of the mark is based on the presentation and Q&A.

Langue(s) d'évaluation principale(s)

Anglais

Programmes

Programmes proposant ce cours à l'école polytechnique de Bruxelles

MA-IRMA | **Master : ingénieur civil en chimie et science des matériaux** | finalité Spécialisée/bloc 1

