Project : Multifunctional materials

Titulaires
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Mnémonique du cours
PROJ-H413

Crédits ECTS
5 crédits

Langue(s) d'enseignement
Anglais

Période du cours
Deuxième quadrimestre

Campus
Solbosch et Plaine

Contenu du cours

Subjects (modified each year) involving theoretical and practical facets are attributed to groups of 2 or 3 students. They have to investigate (literature survey, propose and carry out experiments...) the problem under the supervision of a senior researcher. The results are presented in a written scientific report and a 15 minutes oral presentation.

Objectifs (et/ou acquis d'apprentissages spécifiques)

Apply the acquired knowledge of the previous years to solve or contribute to solving a specific and original material science problem.

Pré-requis et co-requis

Connaissances et compétences pré-requises

All classes of chemistry, physics and material science previously proposed.

Méthodes d'enseignement et activités d'apprentissages

Project

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
- In-depth knowledge and understanding of the advanced methods and theories to schematize and model complex problems or processes
- Reformulate complex engineering problems in order to solve them (simplifying assumptions, reducing complexity)
- Conceive, plan and execute a research project, based on an analysis of its objectives, existing knowledge and the relevant literature, with attention to innovation and valorization in industry and society
- Correctly report on research or design results in the form of a technical report or in the form of a scientific paper
- Present and defend results in a scientifically sound way, using contemporary communication tools, for a national as well as for an international professional or lay audience
- Collaborate in a (multidisciplinary) team
- Develop, plan, execute and manage engineering projects at the level of a starting professional
- Think critically about and evaluate projects, systems and processes, particularly when based on incomplete, contradictory and/or redundant information
- A creative, problem-solving, result-driven and evidence-based attitude, aiming at innovation and applicability in industry and society
- A critical attitude towards one's own results and those of others
- Consciousness of the ethical, social, environmental and economic context of his/her work and strives for sustainable solutions to engineering problems including safety and quality assurance aspects
- The flexibility and adaptability to work in an international and/or intercultural context
- An attitude of life-long learning as needed for the future development of his/her career
- An integrated insight in chemical process and materials' technology
- Insight in chemistry as a link between process and materials technology

Références, bibliographie et lectures recommandées

The references are specific to each subject.

Autres renseignements

Lieu(x) d'enseignement

Plaine et Solbosch

Contact(s)

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Méthode(s) d'évaluation

Autre

Méthode(s) d'évaluation (complément)

The written report and an oral presentation of the results (15 min presentation + 15 min questions) are evaluated as well as the work performed in the laboratories during the realization of the project.

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

1/3 individual lab work + 1/3 written report + 1/3 oral presentation (including answers to the questions)

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