LINMA2360
2015-2016

Project in mathematical engineering

5.0 credits	30.0 h + 22.5 h	2q

Teacher(s) :	Glineur François (coordinator) ; Van Dooren Paul ; Nesterov Yurii ; Absil Pierre-Antoine ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	> http://moodleucl.uclouvain.be/course/view.php?id=8572
Prerequisites :	Depending on the selected topics, this course may require the use, extension or acquisition of advanced concepts in applied mathematics (such as those appearing in the program of the Master in Mathematical Engineering).
Main themes :	Topics covered in this course are related to the application of applied mathematics disciplines taught at UCL, and vary from year to year. Those applications come from the industrial or organizational worlds.
Aims :	Learning outcomes: - LO1.1, LO1.2, LO1.3 - LO2.1, LO2.2, LO2.3, LO2.4, LO2.5 - LO3.1, LO3.2, LO3.3 - LO4.1, LO4.2, LO4.3, LO4.4 - LO5.1, LO5.2, LO5.3,LO5.4, LO5.5, LO5.6 - LO6.1, LO6.3 (the acquisition of certain LOs depending on the type of project carried out) More specifically, at the end of the course, the student will be able to : -- develop within a small group an application of mathematical engineering, proposed by an external partner (company, research center or institution) or inspired by a practical problem from the industrial or organizational worlds -- apply in a multidisciplinary way the theoretical and methodological skills acquired during his/her training in applied mathematics (e.g. in the fields of optimization, numerical analysis, algorithms, discrete mathematics, dynamical systems, etc.) -- acquire and apply new knowledge and advanced skills in applied mathematics related to the selected application (from the scientific literature, reference books, interviews with experts in the field, etc.) Transversal learning outcomes : -- conduct a group project (reformulate objectives, schedule and allocate tasks, communicate effectively within a group, maintain communication with the project sponsor, take decisions as a team and manage interpersonal relationships) -- write and validate specifications, define a schedule, design, implement and test a solution (usually algorithmic or computational), and validate it on real data -- communicate orally about a technical solution -- write a convincing report recommending a technical solution *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Evaluation methods :	Evaluation will take into account -- specifications defined at the beginning of the project -- amount and quality of work performed, and suitabilty of the recommended technical solution -- a final written report about the project -- oral presentation -- feedback from the supervisor and, if appropriate, the external partner.
Teaching methods :	Students work in groups on a project selected among a list of potential projects presented at the beginning of the academic year. A supervisor monitors the progress of each group on a regular basis.

Content :	No specific content. Recent project topics include "Image restoration", "Optimal Economic Dispatch of Power Generating Units", "An intelligent smartphone keyboard", "Fighting fires in Siberia", "Modelling the energy market", "Location of a sensor network and measure aggregation", "Optimal robust design of mechanical structures".
Faculty or entity in charge:	MAP

Programmes / formations proposant cette unité d'enseignement (UE)

Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Mathematical Engineering	MAP2M	5	-	🔍
Master [120] in Electro-mechanical Engineering	ELME2M	5	-	🔍