UCLouvain

lfsab1507

2017

Project 4 (in Mathematical Engineering)

4 credits	22.5 h + 22.5 h	Q2

Teacher(s)	Hendrickx Julien coordinator ;Nesterov Yurii ;Papavasiliou Anthony ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	Bibliographic study and understanding of the problem ; drawing up of the book of specifications Development of an appropriate method allowing to solve the problem Development of algorithms and programming (f.i. MATLAB, C++, etc.) Studies in simulation, performance assessment Drawing up of a final report, final presentation.
Aims	**Contribution of the course to the program objectives** Regarding the learning outcomes of the program of Bachelor in Engineering, this course contributes to the development and the acquisition of the following learning outcomes: • LO 1.1, 1.2 • LO 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 • LO 3.1, 3.2, 3.3 • LO 4.1, 4.3, 4.4, 4.5 • LO 5.1 **Specific learning outcomes of the course** The skills addressed by « Project 4 » include on one hand transverse skills, common to all projects 4, and on the other hand disciplinary, technical skills that are specific to each engineering specialty. Transversal learning outcomes: Projects 4 aim at providing students with transversal skills close to the practice of engineering jobs within a multi-disciplinary context : • analyse and improve existing systems ; • analyse experimental data with a critical mind ; • make the distinction between reality and models used to describe or modify it ; • deal with the notion of uncertainty in the project approach, its conception and the obtained results. The project will allow for a trial-and-error approach, typically adopted by young engineers at the beginning of their careers. Disciplinary learning outcomes: At the end of the course, students will be able to • develop by small groups of students a mathematical engineering application; • apply in a multidisciplinary way the skills acquired during the training in applied mathematics (for example in the fields of optimization, numerical analysis, differential equations, dynamical systems, statistics, etc.); • acquire and use new knowledge and advanced skills in applied mathematics in connection with application (consultation of scientific literature and reference books, contacts with experts in the field, etc.); • implement and test an algorithmic solution, then validate it with real data; communicate in English on a technical theme, orally and/or in writing. - - - - *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	Students will be evaluated both orally in group and individually through a written examination (organised simultaneously for all Projects 4) on the basis of the above mentioned objectives. An evaluation grid is provided at the beginning of the course. Students present and defend their project in front of a jury composed of all teachers, possibly completed by other tutors having contributed to the project supervision.
Teaching methods	Work in small groups supervised by a tutor ; regular presentations of progress made. (Students will be strongly encouraged to write their reports or defend their project in English)

Content	Bibliographic study and understanding of the problem ; drawing up of the book of specifications Development of an appropriate method allowing to solve the problem Development of algorithms and programming (f.i. MATLAB, C++, etc.) Studies in simulation, performance assessment Drawing up of a final report, final presentation.
Inline resources	https://moodleucl.uclouvain.be/course/view.php?id=8790
Other infos	This course is part of the set of courses « Project 4 » of the programme of bachelor in engineering. Projects 4 share common transversal objectives, but exist under different versions oriented towards specific disciplinary objectives, corresponding to the majors/minors of the programme. Each student chooses either the project related to his/her major or to his/her minor (if available).
Faculty or entity in charge	MAP

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Engineering	FSA1BA	4		🔍