UCL Université catholique de Louvain

LINMA1702

2010-2011

Applied mathematics : Optimization

5.0 credits	30.0 h + 22.5 h	2q

Teacher(s) :	Glineur François (compensates Blondel Vincent) ; Blondel Vincent ; Glineur François (coordinator) ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	Introduction to the theory and applications of linear and non-linear optimization.
Aims :	The goal of the course is to initiate the students to problem formulation, analysis and resolution of optimization problems arising in engineering and to illustrate the usefulness of optimization theory with practical applications. The course includes an introduction to the use of specialized optimization software. *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".*
Content :	1. Linear programming (formulation, simplex algorithm, duality). Linear programming software. 2. Convex programming. Properties of convex sets, important engineering models (quadratic programming, semi-definite programming), optimality conditions, solution algorithms. 3. For the exercises: description and modeling of optimization problems arising in different engineering areas: filter design, structure optimization, Markovitz model in finance, antenna design, optimization of chemical processes, circuit design, traffic planning, etc.
Other infos :	no special information
Cycle and year of study :	> Bachelor in Mathematics > Master [120] in Chemical and Materials Engineering > Bachelor in Psychology and Education: General > Bachelor in Information and Communication > Bachelor in Philosophy > Bachelor in Engineering : Architecture > Bachelor in Computer Science > Bachelor in Economics and Management > Bachelor in Motor skills : General > Bachelor in Human and Social Sciences > Bachelor in Sociology and Anthropology > Bachelor in Political Sciences: General > Bachelor in Biomedicine > Bachelor in Engineering > Bachelor in Pharmacy > Bachelor in Religious Studies > Master [120] in Statistics: General > Master [120] in Computer Science and Engineering > Master [120] in Computer Science > Master [120] in Mathematical Engineering > Master [120] in Electrical Engineering > Master [120] in Electro-mechanical Engineering > Master [120] in Mechanical Engineering > Master [120] in Physical Engineering
Faculty or entity in charge:	MAP