UCLouvain

linma2491

2017

Operational Research

5 credits	30.0 h + 22.5 h	Q2

Teacher(s)	Papavasiliou Anthony ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	• Optimization algorithms: dynamic programming, cutting plane methods, decomposition algorithms • Mathematical programming models and languages • Applications: finance, logistics, energy
Aims	In reference to the AA standard, this course contributes to the development, acquisition and evaluation of the following learning outcomes: • AA1.1, AA1.2, AA1.3 • AA2.2, AA2.5 1 At the end of the course, students will be able to: • Formulate problems of decision-making under uncertainty as mathematical programs • Identify structure in large-scale mathematical programs that enables their decomposition • Design algorithms for solving large-scale optimization problems under uncertainty • Implement algorithms for solving large-scale optmization problems • Evaluate the quality of policies for making decisions under uncertainty - - - - *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	• Written exam • Regular homework assignments
Teaching methods	2 hours of magistral courses per week, and 2 hours of training sessions per week. Homeworks will be evaluated by the instructor and/or the teaching assistant.
Content	• Mathematical background (duality, probability theory) • Stochastic programming models • Value of perfect information and the value of the stochastic solution • Cutting plane algorithms • Dynamic programming • Stochastic dual dynamic programming • Lagrange relaxation
Inline resources	https://moodleucl.uclouvain.be/course/view.php?id=4983
Bibliography	• Notes de cours • Impressions de manuels ou articles fournies au cours. Le livre suivant servira de support pour la plupart du cours : John Birge, Francois Louveaux, "Introduction to Stochastic Programming"
Faculty or entity in charge	MAP

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Data Science Engineering	DATE2M	5		
Master [120] in Mathematical Engineering	MAP2M	5		
Master [120] in data Science: Information technology	DATI2M	5		