UCLouvain

mqant1227

2024

Mathematics for Management 2

5.00 credits	45.0 h + 20.0 h	Q1

Teacher(s)	Tancrez Jean-Sébastien ;
Language :	French
Place of the course	Mons
Prerequisites	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	A. Analysis of real functions of several real variables (15h + 10h) • Real functions of several real variables; • Limits, continuity, differentiability; • Introduction to multivariate convex optimization (free and constrained); • Necessary conditions for optimality (Fermat's theorem) and KKT conditions. B. Linear optimization (30h Theory + 20h Exercises) • Introduction to the solid geometry: vector planes, hyperplanes, affine spaces, affine hyperplanes; • Canonical and standard forms of a linear optimization problem; • Geometry of a linear optimization problem (polytopes and vertices); • Fundamental theorems for the existence of the solution: the alternative theorem (or Farka's lemma) and Fredholm's theorem; • Optimality conditions; • Simplex algorithm; • Duality theory: primal-dual solutions; dualisation technique; duality properties; complementary slackness theorem; sensitivity analysis; marginal values; • Examples of modeling classic business engineering and management problems as linear problems
Learning outcomes	**At the end of this learning unit, the student is able to :** At the end of the class, the student will be able to: 1 • handle matrix computing in its main applications to management; • model and solve an optimization problem using linear programming
Bibliography	SYDSTER K., SYDSAETER K., HAMMOND P. (2005), Essential Mathematics for Economic Analysis, 2nd ed., Prentice-Hall.
Faculty or entity in charge	

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor : Business Engineering	INGM1BA	5	MQANT1110	🔍
Bachelor in Management	GESM1BA	5	MQANT1110	🔍