


5.00 crédits	30.0 h	Q1
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Enseignants	Van Vyve Mathieu ;
Langue d'enseignement	Anglais
Lieu du cours	Louvain-la-Neuve
Préalables	This course is reserved for students with a bachelor's degree in business engineering or students with equivalent quantitative method skills.
Thèmes abordés	This course is aimed at providing an understanding of the structures behind supply chain optimization problems as well as an understanding of the methodological aspects of the corresponding solution techniques.
Acquis d'apprentissage	<p>A la fin de cette unité d'enseignement, l'étudiant est capable de :</p> <p>During their programme, students of the LSM Master's in management and Master's in Business engineering will have developed the following capabilities'</p> <p>KNOWLEDGE AND REASONING</p> <ul style="list-style-type: none"> • Master highly specific knowledge in one or two areas of management : advanced and current research-based knowledge and methods. <p>1</p> <p>A SCIENTIFIC AND SYSTEMATIC APPROACH</p> <ul style="list-style-type: none"> • Conduct a clear, structured, analytical reasoning by applying, and eventually adapting, scientifically based conceptual frameworks and models, to define and analyze a problem. • Consider problems using a systemic and holistic approach : recognize the different aspects of the situation and their interactions in a dynamic process.
Modes d'évaluation des acquis des étudiants	<p>1. Continuous assessment</p> <ul style="list-style-type: none"> • Date and type of assessment (work, test, other): ... Work to be handed in for Nov 30, 2017 • Date and type of evaluation: Presentation 21-22 Dec 2017 <p>2. Review during Evaluation Week</p> <ul style="list-style-type: none"> • Q1: Monday 6 Nov. to Fri. 10 Nov. 17; • Q2: from Monday 19 March to Fri. 23 March 17 <p>3. Examination in session of examinations:</p> <ul style="list-style-type: none"> • January: Jan. 5-26, 2018 • June: 4 to 29 June 2018 <p>Oral: No Written: yes Number of hours: 3h.</p>
Contenu	<p>The course is an advanced course in mixed-integer linear programming, with a special emphasis on the distinction between problems, models and algorithms. The objectives of the course include:</p> <ul style="list-style-type: none"> - to be familiar with the classical problems: knapsack problem, assignment problem, travelling salesman problem, facility location problem, lot-sizing problem, spanning tree problem etc... - to be able to distinguish between easy and hard problems (complexity theory) - to have an in-depth understanding on the functioning of modern MIP solvers and the branch-and-cut algorithms. - to understand the difference between weak and strong formulations - understand the main ideas of the advanced algorithms: lagrangean relaxation, cutting planes, extended formulations, column generation, decomposition. - understand the concepts of heuristics, approximations algorithms and meta-heuristics.
Ressources en ligne	Tous les slides sont disponibles sur le Moodle du cours.

Bibliographie	Integer Programming, L.A. Wolsey, Wiley; 2nd Edition.
Autres infos	<p>Pré-requis (idéalement en termes de compétences) : Introduction à la gestion des opérations, à la gestion de la production, ainsi qu'à la recherche opérationnelle. Connaissance élémentaire de la programmation linéaire (algorithme du simplexe et dualité) et de la programmation linéaire mixte entière (algorithme de branchement et séparation). Introduction générale à l'algorithmique et à la programmation informatique. Cours d'algèbre linéaire de premier niveau. Evaluation : Exercices réalisés par groupes de deux ou trois, examen final oral avec préparation écrite. Support : Transparents fournis via icampus et documents transmis au cours. Références : Fournies durant le cours. Interventions d'entreprises : 1 étude de cas Compétences transversales : 1 rédaction écrite 1 travail de groupe 1 résolution de problème 1 prise de décision 1 esprit critique Techniques : 1 outils informatiques 1 modélisation 1 méthodes quantitatives 1 mathématiques</p>
Faculté ou entité en charge:	CLSM

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Crédits	Prérequis	Acquis d'apprentissage
Master [120] : ingénieur de gestion	INGM2M	5		
Master [120] : ingénieur de gestion	INGE2M	5		