






5.00 crédits	30.0 h	Q2
--------------	--------	----

Enseignants	Foret Marc ;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 advanced course describes the objectives, architecture, module contents and limitations of integrated planning systems used in supply chain management, with a special emphasis on the manufacturing and production function (the logistics, transportation and distribution functions are covered in LSM2033): - Enterprise Planning Systems (ERP), - Manufacturing Planning and Control Systems (MPCS), - Advanced Planning and Scheduling Systems (APS). In the second part of the course, some specific supply chain planning problems are studied in more details, including mathematical formulations, solution methods and algorithms: - Strategic Supply Chain Network Design problems, - Tactical/Operational production planning and scheduling problems.
Acquis d'apprentissage	<p>A la fin de cette unité d'enseignement, l'étudiant est capable de :</p> <p>At the end of the class, students should be able to - analyze the limitations of classical enterprise resources planning (ERP) systems with respect to supply chain coordination and integration; - Understand and master the architecture and module contents of advanced planning systems (APS) and manufacturing planning and control systems (MPCS), studied as examples of decision support systems (DSS) or tools for integrating and optimizing the planning of supply chain activities; - Be able to formulate, analyze and design solutions - using state-of-the-art and adequate methods - for some strategic supply chain network design problems, and some tactical or operational production planning and scheduling problems.</p>
Modes d'évaluation des acquis des étudiants	<p>Continuous evaluation</p> <ul style="list-style-type: none"> • Date: To be specified later • Type of evaluation: case solutions including class presentation • Comments: <p>Evaluation week</p> <ul style="list-style-type: none"> • Oral: No • Written: No • Unavailability or comments: No <p>Examination session</p> <ul style="list-style-type: none"> • Oral: No • Written: Yes • Unavailability or comments: Open Book Review with Open Questions and Exercises
Contenu	The class mixes - for part I , lectures with additional individual readings and exercises, - presentation by a software vendor of the current evolution and trends in the market of advanced planning systems, - for part II, lectures with case studies performed in groups. Content : PART I: DECISION SUPPORT SYSTEMS FOR SUPPLY CHAIN PLANNING - Enterprise resources planning (ERP) and Manufacturing Planning (MRP-II and MPCS) : Scope, Module contents, Limitations - Just in Time (JIT) and Lean Manufacturing/Organization - Limitations of ERP systems to support the supply chain planning function - Advanced Planning and Scheduling (APS) systems : Scope, Architecture and module contents, decision models and methods PART II: PRODUCTION PLANNING AND SCHEDULING - Mixed Integer Programming (MIP): formulations and solution methods - Heuristic methods for combinatorial optimization problems - Supply Network Design : Models, Methods, Case study -Production Planning and Scheduling: Models, Methods, Case study Methods : In-class activities 1 Lectures 1 Exercices/PT 1 Project based learning At home activities 1 Readings to prepare the lecture 1 Exercices to prepare the lecture 1 Paper work 1 Students presentation

<p>Autres infos</p>	<p>Pré-requis (idéalement en termes de compétences) : Introduction à : operations management, production management et operations research. Introduction à : supply chain management (LSM2030) Evaluation : - Solution et presentation finale des etudes de cas, - Examen écrit à livre ouvert: questions ouvertes et exercices. Support : - T.E. Vollmann, W.L. Berry, D.C. Whybark, F.R. Jacobs: "Manufacturing Planning and Control Systems for Supply Chain Management", 5th edition, Irwin/McGraw Hill, 2005. - B. Fleischmann, H. Meyr: "Planning Hierarchy, Modeling and Advanced Planning Systems", Chapter 9 in Handbooks in Operations Research and Management Science : vol 11 Supply Chain Management, de Kok, Graves, Zipkin (eds), Elsevier, 2004. + distribution des transparents par iCampus Références : - T.E. Vollmann, W.L. Berry, D.C. Whybark, F.R. Jacobs: "Manufacturing Planning and Control Systems for Supply Chain Management", 5th edition, Irwin/McGraw Hill, 2005. - Stadler H., C. Kilger (Eds), "Supply chain management and advanced planning : concepts, models, software and case studies", 2d edition, Springer, 2002. - Y. Pochet, L.A.Wolsey: "Production Planning by Mixed Integer Programming", Springer, 2006. - Handbooks in Operations Research and Management Science : vol 4 Logisitics of Production and Inventory Management, Graves, Rhinooy Kan, Zipkin (eds), Elsevier 1993 (chapters on production planning) - Handbooks in Operations Research and Management Science : vol 11 Supply Chain Management, de Kok, Graves, Zipkin (eds), Elsevier 2004 (chapters on production planning) - Introduction to Logistics Systems Planning & Control, Ghiani, Laporte, Musmanne, Wiley 2004. Encadrement : Autres : Eléments d'internationalisation : 1 contenu international (le cours aborde-t-il les problématiques internationales liées au contenu ?) 1 études de cas internationales Interventions d'entreprises : 1 étude de cas 1 intervenant du monde de l'entreprise Compétences transversales : 1 présentation orale 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>
<p>Faculté ou entité en charge:</p>	<p>CLSM</p>

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Crédits	Prérequis	Acquis d'apprentissage
Master [120] : ingénieur civil en science des données	DATE2M	5		
Master [120] : ingénieur de gestion	INGM2M	5		
Master [120] : ingénieur civil électromécanicien	ELME2M	5		
Master [120] en science des données, orientation technologies de l'information	DATI2M	5		
Master [120] : ingénieur de gestion	INGE2M	5		
Master [120] : ingénieur civil en mathématiques appliquées	MAP2M	5		