


Teacher(s)	Foret Marc ;Van Vyve Mathieu ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	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.
Aims	<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> <p>-----</p> <p><i>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".</i></p>
Evaluation methods	<p>assessment One case / group work and presentation around The Fresh Connection serious game, and one test, each for 50%.</p> <p>final exam The exam will cover the "theoretical" section of the course.</p> <p>assessment Oral presentation will be graded for clarity of analysis, business relevance, creativity, methodological rigor and synthesis. The student registered to a group will receive the grade of the group which will make 50% of his/her final grade. The other 50% of the final grade will be awarded based upon a personal and open book exam targeting the capacity to characterize and to articulate the relevant elements/methods or practices in SC planning.</p> <p>Active contribution to the class and group discussions is expected.</p>
Teaching methods	<p>Lectures presenting the topics and methods, alternated with seminars by experienced managers (when available) and student presentations (group-work)</p> <p>SERIOUS GAME A considerable part of the learning in the course is achieved through group work and the resolution of a case presented in the serious game: The Fresh Connection. Final results, arguments and conclusions will be presented (oral presentation) making part of the total grade for the course.</p>
Content	<p>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 - Justin 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> <p>course focus This course is an advanced course in supply chain management. We will look specifically about the planning aspect of it: deciding what, how & when should procurement, production, distribution and/or sales be done in the short to long term.</p> <p>Capitalizing on international and recognized professional body of knowledge in SCM such as Apics-SCC, Demand Driven Institute,...The course will describe and illustrate the SC planning challenges in today's supply chains through 2 main sections:</p> <p>The first one will do a critical review of the "so-called" MRPII formal and overall planning approach. The best practices, tools and limitations related to that approach will be characterized, highlighting the need and the importance of Supply Chain planning activities in modern SCM.</p>

	<p>The second one will offer to the student a first "hands-on" opportunity to experience the necessary alignments in SC planning through his/her participation (group) to a serious game (internet based): The Fresh Connection.</p>
Inline resources	<p>Notes, info, slides, and certain articles are available from Moodle UCL under the course LLSMS2034 heading.</p>
Bibliography	<p>Vollmann, Berry, Whybark, and Jacobs. Manufacturing Planning and Control Systems David Simchi-Levi, Philip Kaminsky, Edith Simchi-Levi. Designing and Managing the Supply Chain: Concepts, Strategies, and Case J.R Tony Arnold, Stephen N. Chapman, Lloyd M.Clive – Introduction to Materials Management Ptak and Smith, (McGraw-Hill, 2011). - Orlicky's Material Requirements Planning 3/E</p>
Other infos	<p>At the end of the class, students should be able to</p> <ul style="list-style-type: none"> - Understand the role and impact of a SC strategy and its impact on the SC planning processes - Characterize the elements of a planning & control hierarchy: S&OP, RP, MPS, RCCP, MRP, CRP and to understand the built-in limitations of such approach - analyze the limitations of classical enterprise resources planning (ERP) systems with respect to supply chain coordination and integration and to understand and master the architecture and module contents of advanced planning systems (APS) - Be able to analyze, identify, and formulate ideas for improvement around demand/ supply synchronization issues at any relevant level of planning. <p>Other information Prerequisites (ideally in terms of competencies) Introduction to operations management, production management and operations research. Introduction to supply chain management (LSM2030) Evaluation : - Case solutions including class presentations, - Written exam (open book) with open questions and exercises. 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. + slides provided through iCampus References : - 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 Logistics of Production and Inventory Management, Graves, Rhinoooy 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. Additional and more specialized references will be provided during the class Internationalisation 1 international content (does the course tackle international issues related to the course content ?) 1 international case study Corporate features 1 case study 1 corporate guest Skills 1 presentation skills 1 writing skills 1 team work 1 problem solving 1 decision making 1 critical thinking Techniques and tools for teaching and learning 1 IT tools 1 modelling 1 quantitative methods 1 mathematics</p>
Faculty or entity in charge	<p>CLSM</p>

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Business Engineering	INGM2M	5		
Master [120] in Business Engineering	INGE2M	5		