



6.00 credits

30.0 h

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| Teacher(s)          | Catanzaro Daniele ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Language :          | French                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Place of the course | Mons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Prerequisites       | Basic notions of mathematics, probability theory and statistics.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Main themes         | <p>Supply chain management has gained tremendous momentum over the past decades and is rightfully seen as a competitive imperative in today's far-reaching and increasingly more complex supply networks. However, coordinating a supply chain represents a huge challenge, and requires understanding how integrated supply chains can delight customers, how to overcome adverse supply chain dynamics, how to manage inventory and information, as well as how to preserve superior supplier relationships.</p> <p>Advancing supply chain management can deliver dramatic results; it can put a company ahead of competition or leave it behind.</p> <p>In this course, several important concepts and topics will be addressed:</p> <ul style="list-style-type: none"> <li>- Introduction to the supply chain, its main concepts and its importance</li> <li>- Strategic supply chain design and facility location</li> <li>- Inventory management</li> <li>- Information flows in the supply chain</li> <li>- Outsourcing, supplier relationships and revenue management</li> <li>- New trends in supply chain management</li> </ul>                                                                                                                                                                                                                                                                                                                           |
| Learning outcomes   | <p><b>At the end of this learning unit, the student is able to :</b></p> <p>At the end of this course, the student is able to:</p> <ul style="list-style-type: none"> <li>- Explain the importance of supply chain management in today's companies' competitive strategy.</li> <li>- Identify the main characteristics of a company's supply chain strategy, in particular related to the main drivers of supply chain performance.</li> </ul> <p>1</p> <ul style="list-style-type: none"> <li>- Analyze the consistency of a company's supply chain strategy with its competitive strategy and its customer needs.</li> <li>- Propose recommendations in the right direction to validate or improve a company's supply chain strategy.</li> <li>- Choose and apply the right inventory policy to a particular case, based on structured reasoning.</li> <li>- Recognize the impact of other functions and of other stages on a company's supply chain strategy.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Evaluation methods  | Continuous evaluation, with written exams in itinere. Precise details will be provided during the first lecture. The participation to the first lecture is mandatory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Teaching methods    | Blackboard lectures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Content             | <p>This course introduces to the foundations of strategic supply chain design. It shows the importance of selecting the right number, location, and size of warehouses, plants, and production lines. It teaches how to determine the territories of your facilities, what product should be made where, how product should flow through the supply chain, how to develop quantitative models for supply chain, how to solve such models, and how to critically analyses and adopt the relative solutions in order to make strategical operational decisions.</p> <p>The course is divided into two parts. The first part (Foundation of strategic supply chain network design) includes the following topics: the value of supply chain network modeling, intuition building with center of gravity models, locating facilities using a distance-based approach, alternative service levels and sensitivity analysis, adding capacity to the model, adding costs to two echelon supply chains, adding outbound transportation to the model, introducing facility fixed and variable costs, baseline and optimal baselines. The second part (advanced modeling and expanding to multiple echelons) includes the following topics: the three echelon supply chain modeling, adding multiple products and multi-site production sourcing, multi-objective optimization, how to get industrial strength results, data aggregation in network design, case studies.</p> |
| Inline resources    | <ol style="list-style-type: none"> <li>1. <a href="#">Online resources for FICO Xpress.</a></li> <li>2. <a href="#">Online resources for Supply Chain.</a></li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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| Bibliography                | The lectures will be integrated with some capita selecta from the following references: (1) S. Heipcke. Applications of optimization with Xpress-MP. Dash Optimization, 2002. (2) M. Watson, S. Lewis, J. Jayaraman, and P. Cacioppi. Supply Chain Network Design. FT Press, 2012. |
| Faculty or entity in charge | CLSM                                                                                                                                                                                                                                                                               |

| <b>Programmes containing this learning unit (UE)</b> |         |         |              |                                                                                     |
|------------------------------------------------------|---------|---------|--------------|-------------------------------------------------------------------------------------|
| Program title                                        | Acronym | Credits | Prerequisite | Learning outcomes                                                                   |
| Master [120] in Management<br>(shift schedule)       | GEHC2M  | 6       |              |  |
| Master [120] in Management<br>(shift schedule)       | GEHM2M  | 6       |              |  |