UCLouvain

# mlsmm2251

*2023*

# Modelling of Transport Systems

| 5.00 credits | 30.0 h | Q1 |
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| Teacher(s) | Jourquin Bart ; |
| Language : | French |
| Place of the course | Mons |
| Main themes | The objective of the course is to make students understand the importance of transport networks in the economy in general, with a focus on the supply chain. After a presentation of transportation networks concepts, the course explains the classical four stages modeling approach. More recent alternative techniques are then discussed, such as multi-agent simulation or “virtual networks”. The course is mainly practice-oriented, focusing on a series of case studies that show how the modeling of transport networks is a valuable decision-making tool for studying very different issues such as congestion, the optimal location of facilities, modal shift, the impact of new transport infrastructure, etc. |
| Learning outcomes | **At the end of this learning unit, the student is able to :**<br>**Contribution of the teachingunit to the LO (competency framework) of the program**<br>With regard to the learning outcomes of the Master 120 in Management / Business Engineering programs, this teaching unit contributes contributes to the development and acquisition of the following skills:<br>• 2.2 Master knowledge that is otherwise specialized in one or two areas of management: cutting-edge and recent knowledge and methods, resulting from scientific research.<br>• 2.5. Contribute to the development of new knowledge in management.<br>• 3.1. Conduct clear and structured analytical reasoning by applying and, adapting if necessary, scientifically sound conceptual frameworks and models to describe and analyze a concrete problem.<br>• 3.2. Collect, select and analyze relevant information using rigorous, advanced and appropriate methods.<br>• 3.5 Identify, based on the analysis and diagnosis, solutions that can be implemented in context and identify priorities for action.<br>• 5.2. Situate and understand the functioning of an organization in its changing local and international socio-economic context; and discern strategic issues from operational issues and decisions.<br>**Specific LO at the end of the teaching unit**<br>On completion of this teaching unit, the student will be able to :<br>• Describe the way in which he would model transport traffic of passengers or freight on a network presented in a case, based on the theoretical concepts covered in class.<br>• Imagine new solutions to problems encountered when modeling a non-met example during the class.<br>• Explain how to decompose a complex model by identifying sub-problems to be solved.<br>• Collect the necessary data to solve of a concrete problem that is submitted to him.<br>• Participate in the resolution of a complex case study, in which transportation networks are only an element.<br>• Identify the different stakeholders in transportation networks, in the context of socio-economic analysis.<br>• Interpret the outputs of a transport model in order to identify the socio-economic benefits of an infrastructure project. |
| Bibliography | ORTÚZAR J., WILLUMSEN L. (2011), Modelling Transport, 4 th ed., Wiley. |
| Faculty or entity in charge | CLSM |

## Programmes containing this learning unit (UE)

| Program title | Acronym | Credits | Prerequisite | Learning outcomes |
|---|---|---|---|---|
| Master [120] in Management | GESM2M | 5 | | |
| Master [120] in Environmental Bioengineering | BIRE2M | 5 | | |
| Master [60] in Management | GESM2M1 | 5 | | |
| Master [120] in Business Management | GENT2M | 5 | | |
| Master [120] : Business Engineering | INGE2M | 5 | | |
| Master [120] in Management | GEST2M | 5 | | |
| Master [120] : Business Engineering | INGM2M | 5 | | |
| Master [120] in Management (with work-linked-training) | GESA2M | 5 | | |