linge1216

2023

Management Science: Deterministic models

5.00 credits	30.0 h + 15.0 h	Q2

Teacher(s)	Chevalier Philippe ;De wolf Daniel (compensates Van Vyve Mathieu) ;Van Vyve Mathieu ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	*The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	Education focuses on the approach to modeling, and on solving problems in applications and management science by using mathematical methods or formal logic. It aims to develop a systematic analysis and resolution: What is the matter in quantitative terms, what model is the question correctly? What tools are useful? The conditions of application are respected? How to implement these tools, what is the solution of the model? What is the answer to the original question (in the context of the original question, not in the world of its mathematical abstraction or logic)?
Learning outcomes	**At the end of this learning unit, the student is able to :**
	1 This mathematics course is the third part of the course of Mathematics given in BAC1. This part is devoted to the optimization and differential equations. We can summarize the objectives and purposes of the course to three dimensions: - The learning of the mathematical tool (which is directly targeted a set of knowledge). Acquis should be a reasonable ability to handle the concepts discussed in the course, which are the basic concepts used in the models and quantitative methods in economics and management. - The learning of a formalized and rigorous reasoning (which is more difficult to achieve and is more of "knowledge" of mathematical modeling) - The development of student autonomy in the workplace and in the process of learning. This course is applied to the mathematical sciences in economic and social policies in general, with particular emphasis to business applications. It aims to prepare students for the study of advanced quantitative models or "state of the art" analysis and decision support in different areas of management
Evaluation methods	Final exam consiting entirely of exercices Active participation to exercice session Group work to solve case study with a professional software tool
Teaching methods	The course is given in the form - lectures (the teacher defines the concepts, demonstrates the results, and illustrated with an application), - of exercises (the teacher will submit applications / problems for students and offers a resolution) - supplemented by the resolution of a case study to be done in group. Some lectures might be replaced by self-learning videos that will then be followed by a life Q&A session with the presentation of exercices.
Content	- Optimization without constraints - Optimization under constraints - Linear programming - Integer programming - Shortest path - Non-linear programming Each topic is dealt with examples and illustrations in Economics and Management
Bibliography	Ronald Rardin, Optimization in Operations Research, Prentice Hall, 2014
Other infos	The group case study is only organized during the semester, it will not be possible to realize this case study during the summer session for 25% of the grade in the first session. It is not taken into account in the second session. The use of AI is strictly prohibited to generate the report.
Faculty or entity in charge	ESPO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Additionnal module in Management	APPGEST	5		🔍
Bachelor : Business Engineering	INGE1BA	5	LINGE1114	🔍