UCLouvain	minfo1302 2021	Coding Project

5.00 crédits	30.0 h + 15.0 h	Q1

Enseignants	Catanzaro Daniele ;
Langue d'enseignement	Anglais
Lieu du cours	Mons
Préalables	*Le(s) prérequis de cette Unité d'enseignement (UE) sont précisés à la fin de cette fiche, en regard des programmes/formations qui proposent cette UE.*
Acquis d'apprentissage	
Modes d'évaluation des acquis des étudiants	The evaluation includes quizzes in itinere, a project, and a written exam.The topic of the project changes from year to year; depending on its nature, the statement of the project and the specific modalities of its implementation may be given either during the first MANDATORY lecture of the course or in itinere. In the case of a red code (e.g., COVID19 pandemic), an oral will replace the written exam.
Méthodes d'enseignement	Standard blackboard lectures. Attending the course is strongly adviced and mandatory for the very first lecture.
Contenu	This course introduces to algorithmic problem solving. Its main goal is to learn how to model practical problems arising from management engineering by using the most appropriate and efficient data structures, as well as how to implement the most efficient solution approaches by using classical algorithmic and graph theory. The course emphasizes the importance of both digitalization and the relationship between algorithms and programming, as well as the aspects related to project management and problem solving skills by means of the development of a final coding project aimed at solving a specific problem assigned each year. The problem may arise potentially by any area of management engineering or computer science; it may enjoy potentially any routing, partitioning, coloring, location, telecommunication, sustainable logistics and supply chain management, portfolio, scheduling, data mining or business analytics features, and may have any general structure. The students will have to work in group to tackle and solve it in the most efficient way as well as to be ready to defend their work during the examination session. The course includes in particular the following topics: 1. Algorithms and Algorithmic Analysis 2. Induction, Recursion, and Search 3. Fundation of data structures: Trees and Graphes 4. Basic algorithms on graphs 5. Brute-force search 6. Introduction to complexity classes 7. Well Solved Optimization Problems in Management Science - Part I: Spanning Trees 8. Well Solved Optimization Problems in Management Science - Part II: Shortest Paths 9. Hard Optimization Problems in Management Science - Part I - Spanning Trees with constraints 10. Hard Optimization Problems in Management Science - Part I - Shortest Paths with constraints
Ressources en ligne	Please, refer to the slides of the course as well as to the official channel in Microsoft Teams.
Bibliographie	Please, refer to the slides of the course.
Autres infos	The main language of this course is English.
Faculté ou entité en charge:	CLSM

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Crédits	Prérequis	Acquis d'apprentissage
Bachelier : ingénieur de gestion	INGM1BA	5	MINFO1201 ET MQANT1227	🔍