Course Descriptions None 2022-2023

Course Title	Operations Research
Course Code	EBC2106
ECTS Credits	6,5
Assessment	Whole/Half Grades

Period

Period	Start	End	Mon	Tue	Wed	Thu	Fri
4	6-2-2023	31-3-2023	L		X		X

Level	Advanced
Coordinator	Tjark Vredeveld For more information:t.vredeveld@maastrichtuniversity.nl
Language of instruction	English
Goals	Application of deterministic and stochastic techniques to theoretical and practical optimisation problems in OR.
Description	PLEASE NOTE THAT THE INFORMATION ABOUT THE TEACHING AND ASSESSMENT METHOD(S) USED IN THIS COURSE IS WITH RESERVATION. A RE-EMERGENCE OF THE CORONAVIRUS AND NEW COUNTERMEASURES BY THE DUTCH GOVERNMENT MIGHT FORCE COORDINATORS TO CHANGE THE TEACHING AND ASSESSMENT METHODS USED. THE MOST UP-TO-DATE INFORMATION ABOUT THE TEACHING/ASSESSMENT METHOD(S) WILL BE AVAILABLE IN THE COURSE SYLLABUS. The course concentrates on algorithmic techniques to approach both theory and practice of problem solving in Operations Research. As a foundation, we start with an introduction to problem encoding and analysis of algorithms and computation times. The focus is then on classical problems from Combinatorial Optimisation, namely shortest path problems, minimum spanning trees, maximum flow and minimum cost flow problems. For all problems, one or several algorithms will be discussed and analysed in-depth. Finally, we study the foundations of stochastic processes and Markov Chains, with applications to the analysis of queues and queueing systems
Literature	"Network Flows" by Akuja, Magnanti, and Orlin (chapters 2-7, 9, 12, 13). In addition, several chapters of other textbooks in Combinatorial Optimiziation and Operations Research, and own reader.
Prerequisites	Analysis, linear algebra, basic probability theory, linear programming (modelling and solving), programming. Exchange students need to be aware that very specific pre-knowledge is required for this course. A solid background in mathematics is necessary.
Teaching methods	PBL / Lecture / Assignment / Groupwork
Assessment methods	Final Paper / Participation / Written Exam
Evaluation in previous academic year	For the complete evaluation of this course please click http://iwio-sbe.maastrichtuniversity.nl/rapporten.asp?referrer=codeUM

This course belongs to the following programme / specialisation

Bachelor Econometrics and Operations Research	Year 2 Compulsory Course(s)
SBE Exchange Bachelor	Bachelor Exchange Courses
SBE Exchange Master	Bachelor Exchange Courses
SBE Non Degree Courses	Bachelor Courses