Course Descriptions None 2020-2021

Course Title	Operations Research Applications
Course Code	EBC4187
ECTS Credits	6,5
Assessment	Whole/Half Grades

Period

Period	Start	End	Mon	Tue	Wed	Thu	Fri
5	12-4-2021	28-5-2021	C				

Level	Advanced
Coordinator	Andre Berger For more information:a.berger@maastrichtuniversity.nl
Language of instruction	English
Goals	Students learn how to apply general techniques from mathematical programming and combinatorial optimisation to specific classes of problems as well as to real-life applications in these areas. This includes the mathematical analysis of approximation algorithms and heuristics for these applications. Students will learn how to read state-of-the-art research articles, to understand the technical details, and to give presentations on the subjects.
Description	PLEASE NOTE THAT THE INFORMATION ABOUT THE TEACHING AND ASSESSMENT METHOD(S) USED IN THIS COURSE IS WITH RESERVATION. THE INFORMATION PROVIDED HERE IS BASED ON THE COURSE SETUP PRIOR TO THE CORONAVIRUS CRISIS. AS A CONSEQUENCE OF THE CRISIS, COURSE COORDINATORS MAY BE FORCED 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. This course is devoted to mathematical models and solution methods in logistics and telecommunication. Based on recent articles from scientific journals, we review classical as well as new optimisation models from problem domains such as facility location, vehicle routing, personnel scheduling, network design, traffic network analysis, railway planning, optical telecom networks, frequency planning for GSM-networks, and site location in UMTS. These problems are analysed with respect to solvability, complexity, and approximability. In particular, exact and approximation algorithms as well as heuristic techniques for these problem are studied. Students will learn how techniques learned from the courses "Algorithms and Optimisation" and "Modelling and Solver Technology" are applied to real world problems, and how these techniques can be refined in order to address specific problem structures.
Literature	Recent research articles and lecture notes will be provided.
Prerequisites	Students have to be familiar with the subjects of the Master courses "Algorithms and Optimisation" and "Modelling and Solver Technology" from the Master programme Econometrics and Operations Research. This includes at least basic algebra, linear programming, problems and techniques from combinatorial optimisation and complexity theory. Programming abilities in C++ and CPLEX.
Teaching methods	PBL / Presentation / Lecture / Assignment / Papers / Groupwork / Research
Assessment methods	Attendance / Participation / Assignment / Presentation
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

Master Business Research - Operations Research	Year 1 Compulsory Course(s)
Master Econometrics and Operations Research	E&OR Electives