Course Descriptions None 2020-2021

Course Title	Allocations and Algorithms
Course Code	EBC2121
ECTS Credits	6,5
Assessment	Whole/Half Grades

Period

Period	Start	End	Mon	Tue	Wed	Thu	Fri
4	1-2-2021	26-3-2021	X		X		

Level	Advanced
Coordinator	Tim Oosterwijk For more information:t.oosterwijk@maastrichtuniversity.nl
Language of instruction	English
Goals	The aim of this course is to familiarize students with advanced techniques from algorithm design and analysis. The students will also learn how to translate algorithmic ideas into working codes.
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. In order to satisfy the Econometrics & OR curriculum, you have to choose two of the courses EBC2091, EBC2120, EBC2121, EBC2122 in period 4. Economic entities like companies, non-governmental Organisations, and municipalities are continuously faced with difficult optimization problems. Finding good solutions to these problems is crucial for improving economic performance, and hence it comes by no surprise that the design of efficient algorithms for all kinds of optimization problems has been a flourishing area of research in computer science and operations research for many decades already. This course will introduce fundamental techniques in algorithm design (e.g., greedy algorithms, graph algorithms, approximation algorithms) that are used to derive efficient algorithms and heuristics for various optimization problems. It will also be discussed how to translate algorithmic ideas into working code, and many exercises and small cases will be discussed.
Literature	Select chapters from these two textbooks, which are available on the author's website for personal use: David P. Williamson and David B. Shmoys. The design of approximation algorithms. Cambridge University Press, 2011. Vijay V. Vazirai. Approximation Algorithms. Springer-Verlag New York, 2001.
Prerequisites	Basic courses in linear programming/algebra, basic knowledge of combinatorial optimisation (discrete Operations Research).
Teaching methods	PBL / Presentation / Lecture / Assignment / Papers / Groupwork
Assessment methods	Attendance / Written Exam / 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

Bachelor Econometrics and Operations Research	Year 3 Core Course(s)
Bachelor Econometrics and Operations Research	Year 3 Elective Course(s)