

Course Descriptions Master 2022-2023

Course Title Game Theory and Optimisation
 Course Code EBC4188
 ECTS Credits 6,5
 Assessment Whole/Half Grades

Period	Start	End	Mon	Tue	Wed	Thu	Fri
1	5-9-2022	21-10-2022	X			X	

Level Advanced

Coordinator Marc Schröder, Veerle Timmermans For more information: m.schroder@maastrichtuniversity.nl; vm.timmermans@maastrichtuniversity.nl

Language of instruction English

Goals This course provides a comprehensive overview of optimization techniques such as linear and integer programming, and non-linear programming, with applications in game theory and economics. Students learn optimization techniques from mathematics and operations research, and how to apply them in models from game theory and economic theory.

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.

Topics in optimization include duality theorems in LP, branch and bound and cutting plane algorithms in IP, and Kuhn-Tucker conditions for NLP.

Topics in game theory and economics include computation of Nash equilibrium and refinements and mechanism design.

Literature The course will be based on chapters from standard textbooks plus additional readers.

Recommended literature for background reading:

- * Hans Peters : Game Theory : A Multi-Leveled Approach. Springer-Verlag.
- * Stephen Boyd and Lieven Vandenberghe : Convex Optimization. Cambridge University Press.
- * Roger Myerson : Game Theory : Analysis of Conflict. Harvard University Press.
- * L.J. Vanderbei : Linear Programming - Foundations and Extensions. 4th Edition, Springer.
- * Jorge Nocedal and Stephen J. Wright : Numerical Optimization. 2nd Edition, Springer.

Prerequisites Only Master students can take this course. Exchange students need to have obtained a BSc degree in Economics, International Business, Econometrics, or a related topic. Familiarity with the basic concepts of optimization and linear programming will be helpful. A solid basis in mathematics and calculus is also recommendable.

Teaching methods PBL / Lecture

Assessment methods 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

Master Business Research - No specialisation	Year 2 Free Elective(s)
Master Business Research - Operations Research	Year 1 Compulsory Course(s)
Master Econometrics and Operations Research	Compulsory Course(s)
Master Economic and Financial Research - Econometrics	Year 1 Core Course(s)
Master Economic and Financial Research - Econometrics	Year 1 Elective Course(s)
Master Economic and Financial Research - Econometrics	Year 2 Elective Course(s)
Master Economic and Financial Research - No specialisation	Year 2 Elective Course(s)
SBE Exchange Master	Master Exchange Courses
SBE Non Degree Courses	Master Courses