Course Descriptions Master 2017-2018

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

Period

Period	Start	End	Mon	Tue	Wed	Thu	Fri
1	4-9-2017	27-10-2017	X			X	

Level	Advanced
Coordinator	Dries Vermeulen, Mathias Staudigl For more information:d.vermeulen@maastrichtuniversity.nl; m.staudigl@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	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, selfish routing in networks and the price of anarchy, and non-emptiness of the core.
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. David Luenberger and Yinyu Ye : Linear and Nonlinear Programming. Stephen Boyd and Lieven Vandenberghe : Convex optimization. Cambridge University Press. Christos H. Papadimitriou and Kenneth Steiglitz : Combinatorial Optimization: Algorithms and Complexity. Laurence A. Wolsey and George L. Nemhauser : Integer and Combinatorial Optimization, John Wiley & Sons. Sebastian Bubeck (2015) : Algorithms and complexity. Foundations and trends in machine learning 8 (231-358). Roger Myerson : Game Theory : Analysis of Conflict. Harvard University Press.
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 Track OR	Track Operation Research Compulsory Courses
Master Econometrics and OR	Actuarial Science
Master Econometrics and OR	Econometrics
Master Econometrics and OR	Mathematical Economics
Master Econometrics and OR	Operations Research
Master Economic and Financial Research Track Econometrics	Electives
Master Economic and Financial Research Track Econometrics	Track Econometrics Core Courses
Master Economic and Financial Research	Electives