

## Course Descriptions Master 2018-2019

Course Title Game Theory  
 Course Code EBC4146  
 ECTS Credits 6,5  
 Assessment None

Period	Start	End	Mon	Tue	Wed	Thu	Fri
1	3-9-2018	26-10-2018	X			X	

Level Advanced  
 Coordinator Hans Peters For more information:h.peters@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	Free Electives
	Master Business Research - Operations Research	Free Electives
	Master Economic and Financial Research - Econometrics	Economic Theory, Behaviour & Computing
	Master Economic and Financial Research	Economic Theory, Behaviour & Computing
	SBE Exchange Master	Master Exchange Courses
	SBE Non Degree Courses	Master Courses