

# Course Descriptions Master 2015-2016

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		31-8-2015	23-10-2015	X			X	

Level                                Advanced

Coordinator                      Dries Vermeulen, Tobias Harks For more information: d.vermeulen@maastrichtuniversity.nl; t.harks@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.

Literature :

Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein : Introduction to Algorithms, MIT Press.

Hans Peters : Game Theory : A Multi-Leveled Approach, Springer-Verlag.

David Luenberger and Yinyu Ye : Linear and Nonlinear Programming.

Recommended literature for background reading :

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.

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