

## Course Descriptions None 2019-2020

Course Title Optimisation  
Course Code EBC2105  
ECTS Credits 6,5  
Assessment None

Period	Start	End	Mon	Tue	Wed	Thu	Fri
1	2-9-2019	25-10-2019	X	X	X		X

Level Intermediate  
Coordinator Stan van Hoesel For more information:s.vanhoesel@maastrichtuniversity.nl  
Language of instruction English

Goals In this course the student will learn to solve both linear and non-linear constrained optimization problems.  
Description Optimisation problems arise in all fields that econometricians encounter, such as operations research, game theory, statistics, micro- and macroeconomics and finance. The aim of this course is to show the methodology for solving constraint optimisation problems both for linear and non-linear problems. These methodologies are also known as Linear and Non-Linear Programming, respectively. The following topics and techniques will be treated: the standard simplex method, duality, sensitivity analysis, the primal-dual simplex method, the network simplex method, first and second order necessary and sufficient conditions, the Lagrangian-function, Kuhn-Tucker conditions and constraint qualification. Besides this, special attention is paid to the application of these methodologies in practical problems.

Literature Course book.  
Vanderbei, R.J., Linear Programming: Foundations and Extensions, 4th ed., Springer, 2014 (ISBN 978-1-4614-7629, DOI 10.1007/978-1-4614-7630-6).

Prerequisites Basic algebra (for linear programming), and advanced calculus (for nonlinear programming). Exchange students need to be aware that very specific pre-knowledge is required for this course. A solid background in mathematics is necessary. Students should be aware of the following concepts: Algebra: working knowledge of vector computing and matrices (including inverse matrices). Linear equations, and find the solutions of a set of equations etc.  
Function theory on the level of optimisation of functions of multiple variables under side conditions (Lagrange multipliers)

Teaching methods An advanced level of English.  
PBL / Lecture  
Assessment methods Attendance / Participation / 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 Bachelor Econometrics and Operations Research Year 2 Compulsory Course(s)