

## Course Descriptions Bachelor 2019-2020

Course Title	Optimisation																
Course Code	EBC2105																
ECTS Credits	6,5																
Assessment	None																
Period	<table><tr><th>Period</th><th>Start</th><th>End</th><th>Mon</th><th>Tue</th><th>Wed</th><th>Thu</th><th>Fri</th></tr><tr><td>1</td><td>2-9-2019</td><td>25-10-2019</td><td>X</td><td>X</td><td>X</td><td></td><td>X</td></tr></table>	Period	Start	End	Mon	Tue	Wed	Thu	Fri	1	2-9-2019	25-10-2019	X	X	X		X
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 <a href="http://iwio-sbe.maastrichtuniversity.nl/rapporten.asp?referrer=codeUM">http://iwio-sbe.maastrichtuniversity.nl/rapporten.asp?referrer=codeUM</a>																
This course belongs to the following programme / specialisation	Bachelor Econometrics and Operations Research      Year 2 Compulsory Course(s)																