# Course Descriptions None 2019-2020

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

Period

| 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.<br>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).<br>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.<br>Function theory on the level of optimisation of functions of multiple variables under side conditions (Lagrange multipliers)<br><br>An advanced level of English. |
| Teaching methods | 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) |