

Course Descriptions Bachelor 2019-2020

| Course Title | Optimisation | | | | | | | | | | | | | | | | |
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| 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) 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) | | | | | | | | | | | | | | | | |