

# Course Descriptions Master 2013-2014

Course Title Mathematical Research Tools

Course Code EBC4182

ECTS Credits 6,5

Assessment None

| Period | Period | Start    | End        | Mon | Tue | Wed | Thu | Fri |
|--------|--------|----------|------------|-----|-----|-----|-----|-----|
| 1      |        | 2-9-2013 | 25-10-2013 |     | X   |     | X   |     |

Level Advanced

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Language of instruction English

Goals This course offers basic mathematical methods for economic research. The focus is on static and dynamic optimisation and on the underlying mathematics, necessary to understand and apply these optimisation methods. These tools are relevant for all specialisations within the Economic and Finance Research (EFR) master program.

Description Multi-variable calculus, static optimisation methods in particular Lagrange and Kuhn-Tucker, connection with linear and non-linear programming, dynamic (discrete and non-discrete) optimisation methods (Bellman principle, calculus of variations, optimal control, Pontryagin maximum principle), basic elements of difference and differential equations and of dynamic systems.

Literature Jehle, Geoffrey A. and Philip J. Reny : Advanced Microeconomic Theory (2nd edition). Sydsaetter, K., Hammond, P., Seierstad, A. and A. Strom : Further Mathematics for Economic Analysis (Financial Times / Prentice Hall, 2008).

Prerequisites Basic level of mathematics (e.g. Sydsaetter et.al, Mathematics for Economic Analysis).

Teaching methods PBL / Lecture / Assignment

Assessment methods 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

|  |                       |
|--|-----------------------|
| Master Business Research               | Methodology Electives |
| Master Business Research Track OR      | Methodology Electives |
| Master Economic and Financial Research | Compulsory Courses    |