# Course Descriptions None 2020-2021

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| Course Title | Dynamic Modelling and Dynamic Optimisation |
| Course Code | EBC2116 |
| ECTS Credits | 6,5 |
| Assessment | Whole/Half Grades |

Period

| Period | Start | End | Mon | Tue | Wed | Thu | Fri |
|---|---|---|---|---|---|---|---|
| 4 | 1-2-2021 | 26-3-2021 | X | | | X | |

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| Level | Advanced |
| Coordinator | Ton Storcken, Hans de Graaff For more information:t.storcken@maastrichtuniversity.nl; h.degraaff@maastrichtuniversity.nl |
| Language of instruction | English |
| Goals | In this course the student will learn to analyse stability properties of equilibria of dynamic systems in qualitative terms,<br>to apply the maximum principle to optimal control problems, draw phase diagrams with Mathematica and use these to analyse solutions of optimal control problems. |
| Description | PLEASE NOTE THAT THE INFORMATION ABOUT THE TEACHING AND ASSESSMENT METHOD(S) USED IN THIS COURSE IS WITH RESERVATION. THE INFORMATION PROVIDED HERE IS BASED ON THE COURSE SETUP PRIOR TO THE CORONAVIRUS CRISIS. AS A CONSEQUENCE OF THE CRISIS, COURSE COORDINATORS MAY BE FORCED TO CHANGE THE TEACHING AND ASSESSMENT METHODS USED. THE MOST UP-TO-DATE INFORMATION ABOUT THE TEACHING/ASSESSMENT METHOD(S) WILL BE AVAILABLE IN THE COURSE SYLLABUS. Besides a great amount of static models in Economic Theory dynamic models are also frequently studied. These models can be found in various fields such as Macro and Micro Economics, Public Choice, Game Theory and Finance. First, dynamic models, in terms of systems of differential equations are studied with respect to stability. Next optimal control problems are solved by means of the maximum principle of Pontryagin. Applications range from optimal investment to optimal fishing and problems concerning environmental economics. |
| Literature | Léonard, D. and N. van Long, Optimal Control Theory and Static Optimization in Economics, Cambridge University Press, Cambridge, UK, 1992, ISBN 0-521-33746-1<br>Electronic Courseware for Mathematica. |
| Prerequisites | The student should be familiar with<br>- linear differential equations,<br>- non-linear optimisation,<br>- standard calculus on functions of more than one variable.<br><br>Exchange students need to follow a Bachelor in economics.<br>An advanced level of English. |
| Teaching methods | PBL / Lecture / Assignment / Groupwork |
| Assessment methods | Final Paper / Written Exam / Presentation |
| 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

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| Bachelor Economics and Business Economics - Economics | Year 3 Quantitative Economics Elective(s) |
| Bachelor Economics and Business Economics - Emerging Markets | Year 3 Elective Course(s) |
| Bachelor Economics and Business Economics - Economics and Management of Information | Year 2+3 Quantitative Economics Elective(s) |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Accounting |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Finance |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Inf Mgmt |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Marketing |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Org |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj SCM |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Strategy |
| Bachelor International Business - Emerging Markets | Year 3 Elective Course(s) |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Accounting |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Finance |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Inf Mgmt |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Marketing |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Org |
| Bachelor International Business | Year 3 QE Elec(s) - Maj SCM |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Strategy |
| SBE Exchange Bachelor | Bachelor Exchange Courses |
| SBE Exchange Master | Bachelor Exchange Courses |
| SBE Non Degree Courses | Bachelor Courses |