Course Descriptions None 2025-2026

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	2-2-2026	27-3-2026	X			X	

Level	Advanced
Coordinator	Veerle Timmermans For more information:vm.timmermans@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, 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	Dynamic models are important in economic theory and can be found in various fields such as Macro and Micro Economics, Public Choice, Game Theory and Finance. First, systems of differential equations are studied with respect to stability. Next optimal control problems are solved by means of the maximum principle of Pontryagin. We discuss problems like finding the firms optimal investment plan over time in equipment and how to manage a (non-) renewable stream of resources like fish.
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
Prerequisites	- The student should be familiar with linear differential equations, non-linear optimisation, standard calculus on functions of more than one variable. - Exchange students need to follow a Bachelor in economics. - An advanced level of English.
Transitional Regulations	TRANSITIONAL REGULATIONS <ul class="trcohorts"> - Bachelor Economics and Business Economics - Economics and Management of Information [2024-2025 or earlier] - Bachelor Economics and Business Economics - International Business Economics [2024-2025 or earlier] - From 2025-2026 onwards, education and exam/resit opportunities are offered. Alternative options may be available. See the Bachelor EER 2025-2026 Appendix I Article 16 for more information. <table><col style="width: 200px;"><col style="width: 120px;"><col style="width: 120px;"><col><thead><tr><th>Academic Year</th><th>Education</th><th>Exam/Resit</th><th>Replacement(s)</th></tr></thead><tbody><tr><td>2025-2026 onwards</td><td>X</td><td>X</td><td>See the Bachelor EER 2025-2026 Appendix I Article 16 for more information</td></tr></tbody></table>
Teaching methods	PBL / Lecture / Assignment
Assessment methods	Final Paper / Assignment
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 Economics and Business Economics - Economics	Year 3 Quantitative Economics Electives
Bachelor Economics and Business Economics - Emerging Markets	Year 3 Elective Courses
Bachelor Economics and Business Economics - Economics and Management of Information	In transition - Year 2+3 QE Electives
Bachelor Economics and Business Economics - Economics and Management of Information	Year 3 Quantitative Economics Elective
Bachelor Economics and Business Economics - International Business Economics	In transition - Maj Accounting - QE Elec
Bachelor Economics and Business Economics - International Business Economics	In transition - Maj Finance - QE Elec
Bachelor Economics and Business Economics - International Business Economics	In transition - Maj Inf Mgmt - QE Elec
Bachelor Economics and Business Economics - International Business Economics	In transition - Maj Marketing - QE Elec
Bachelor Economics and Business Economics - International Business Economics	In transition - Maj Org - QE Elec
Bachelor Economics and Business Economics - International Business Economics	In transition - Maj SCM - QE Elec
Bachelor Economics and Business Economics - International Business Economics	In transition - Maj Strategy - QE Elec
Bachelor Economics and Business Economics - International Business Economics	Year 3 Quantitative Economics Elective
Bachelor International Business - Emerging Markets	Year 3 Elective Courses
Bachelor International Business	Year 3 QE Elecs - Maj Accounting
Bachelor International Business	Year 3 QE Elecs - Maj Finance
Bachelor International Business	Year 3 QE Elecs - Maj Inf Mgmt
Bachelor International Business	Year 3 QE Elecs - Maj Marketing
Bachelor International Business	Year 3 QE Elecs - Maj Org
Bachelor International Business	Year 3 QE Elecs - Maj SCM
Bachelor International Business	Year 3 QE Elecs - Maj Strategy
SBE Exchange Bachelor	Bachelor Exchange Courses
SBE Exchange Master	Bachelor Exchange Courses
SBE Non Degree Courses	Bachelor Courses