

## Course Descriptions None 2025-2026

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

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

- 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.

Academic Year	Education	Exam/Resit	Replacement(s)
2025-2026 onwards	X	X	X

See the Bachelor EER 2025-2026 Appendix I Article 16 for more information.

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