

# Course Descriptions Bachelor 2020-2021

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	1-2-2021	26-3-2021	X			X	

Level Advanced

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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 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  
 Electronic Courseware for Mathematica.

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.

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

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