Course Descriptions None 2024-2025

Course Title	Mathematical Research Tools
Course Code	EBC4182
ECTS Credits	6,5
Assessment	Whole/Half Grades

Period

Period	Start	End	Mon	Tue	Wed	Thu	Fri
1	2-9-2024	20-10-2024		X		X	

Level	Advanced
Coordinator	Andrés Perea y Monsuwé For more information:a.perea@maastrichtuniversity.nl
Language of instruction	English
Goals	The goal of this course is learning how to find, classify and analyze solutions to optimization problems.
Description	In economics and business we must often solve maximization or minimization problems. Think, for instance, of a firm that wants to minimize its costs while guaranteeing a certain production level, or investors that wish to find the optimal portfolio given a certain degree of risk. How do we find the solutions to such optimization problems, and how can we classify and analyze such solutions? This will be the main objective of this course. We will concentrate on four themes: (i) optimization problems without constraints, (ii) optimization problems with equality and inequality constraints, (iii) parametrized optimization, that is, how does the optimal solution change if we change the underlying parameters in the problem, and (iv) optimization in a dynamic setting with finite and infinite horizon.
Literature	* Rangarajan K. Sundaram: "A First Course in Optimization Theory", Cambridge University Press, 2011.
Prerequisites	This course is in transition for the master Business Research. See the Master Education and Examination Regulations for more information. The following rule applies to master Business Research students who started the programme prior to academic year 2024-2025. TRANSITIONAL REGULATION (EBC4182): The master Business Research has been discontinued. Courses of the Business Research master's programme will continue to be offered until and including academic year 2025-2026 with exam opportunities running until and including 2026-2027. 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 - No specialisation	Transitional Regulation
Master Business Research - Operations Research	Transitional Regulation
Master Economic and Financial Research - No specialisation	Year 1 Compulsory Course(s)