MODULE DESCRIPTION

Module Title	Mathematical Methods in Economics and Management				
Module Code	MATH-243				
Module Type	Elective				
Level	Undergraduate				
Year/Semester	Any semester from 4 - 8				
Instructor's Name	**TBA**				
ECTS	6	**Lectures/week**	3 academic hours	**Laboratories/week**	N/A
Module Overview	**Aims & Objectives:** The module aims to familiarize students with the basic concepts of limit, continuity, differentiation and integral. Furthermore, this module aims to introduce students to the theory of optimization and help them to understand appropriate mathematical methods that will lead them to study and solve economic, administrative and other problems using mathematical analysis**.**				
Learning Outcomes	By the end of this module, students should be able to understand the following: ▪ theory of real numbers ▪ differential and integral calculus of functions of one variable ▪ basics of multivariable functions ▪ the necessary tools to understand financial figures				
Prerequisites	N/A	**Required**	None		
Module Content	▪ Introduction ▪ Basics of Mathematics ▪ Basic equations and functions ▪ Sums and series ▪ Differentiation ▪ Product and Quotient Rules ▪ Maximum and Minimum ▪ Price Elasticity of Demand ▪ Concavity and inflection points ▪ Exponential and logarithmic functions ▪ Compound Interest ▪ Derivatives of Exponential and Logarithm Functions ▪ Integration (Indefinite integral, Integration by Substitution, Definite Integral)				

	Differential Calculus of Two Variables (Functions of two variables, partial derivatives)	
Teaching Methodology	Lectures	Class notes, handouts, cases studies/examples, critical debate and evaluation
	Multimedia	PowerPoint, audio and visual
	Class Assignments	▪ Quizzes, group exercises, sample problems and solutions are provided for each chapter ▪ Combination of lecture and problem-solving, requiring students to apply basic mathematical tools and techniques to business and economics-related problems.
Bibliography	Required	▪ Mark, D., K., 2021. *Trading Tactics in the Financial Market: Mathematical Methods to Improve Performance (Management for Professionals),* Springer
	Recommended	▪ Jaroslav Ramík, J., 2020. *Pairwise Comparisons Method: Theory and Applications in Decision Making (Lecture Notes in Economics and Mathematical Systems Book 690) 1st Edition*, Springer ▪ Gustav Feichtinger, G., Kovacevic, R., M., Tragler, G., 2018. *Control Systems and Mathematical Methods in Economics: Essays in Honor of Vladimir M. Veliov (Lecture Notes in Economics and Mathematical Systems Book 687) 1st Edition*, Springer ▪ Mutanov, G., 2014. *Mathematical Methods and Models in Economic Planning, Management and Budgeting 2nd Edition*, Springer
Language of Instruction	English	
Assessment	The assessment of students is made up of two components: ▪ continuous assessment (40 marks) ▪ final written exam (60 marks) The 40 marks of the continuous assessment are allocated as follows: ▪ the midterm exam (20 marks), ▪ attendance (5 marks), ▪ 2 assignments/projects (15 marks) The final written exam carries 60 marks and takes place at the end of each academic semester. This exam tests the whole content of a module taught in	

	the current semester. The final mark for each module is the sum of the continuous assessment mark and the final written exam. Continuous Assessment + Final Exam = 100 marks 40 marks + 60 marks = 100 marks **THE PASSING MARK FOR EACH MODULE IS 50/100**

Mark's Description	**MARK RANGE**	**GENERAL CHARACTERISTICS**
Excellent	96 - 100	Exceptional breadth and depth of knowledge and understanding of the area of study; evidence of extensive and appropriate selection and critical evaluation/synthesis/analysis and of reading/research beyond the prescribed range, in both breadth and depth, to advance work/direct arguments; exceptional demonstration of relevant skills; excellent communication; performance deemed to be beyond expectation.
	91 - 95	Outstanding/excellent knowledge and understanding of the area of study as the student is typically able to go beyond what has been taught; evidence of extensive and appropriate selection and critical evaluation/synthesis/ analysis of reading/research within the prescribed range, to advance work/direct arguments; excellent demonstration of relevant skills; excellent communication; performance deemed according to expectation of the level.
Very good	88 - 90	Very good knowledge and understanding of the area of study as the student is typically able to relate facts/concepts together with some ability to apply to known/taught contexts; evidence of appropriate selection and evaluation of reading/research, some beyond the prescribed range, may rely on set sources to advance work/direct arguments; demonstrates autonomy in approach to learning; very good demonstration of relevant skills; strong communication skills.
	84 - 87	
	81 - 83	
Good	76 - 80	Good knowledge and understanding of the area of study balanced towards the descriptive rather than analytical; evidence of appropriate selection and evaluation of reading/research but generally reliant on set sources to advance work/direct arguments; good demonstration of relevant skills, though may be limited in range; communication shows clarity but structure may not always be coherent.
	71 - 75	
	66 - 70	
Satisfactory	61 - 65	Knowledge and understanding is satisfactory to deal with terminology, basic facts and concepts but fails to make meaningful synthesis; some ability to select and evaluate reading/research however work may be more generally descriptive; strong reliance on available support set sources to advance work; arguments may be weak or poorly constructed; adequate demonstration of relevant skills over a limited range; communication/presentation is generally competent but with some weaknesses.
	56 - 60	
	50 - 55	
Fail	21 - 49	Unsatisfactory in knowledge and understanding of the area of study; some ability to select and evaluate reading/research however work is

		more generally descriptive; fails to address some aspects of the brief; a limited use of sources to advance work; arguments may be weak/poor or weakly/poorly constructed; demonstration of relevant skills over a reduced range; communication shows limited clarity, poor presentation, structure may not be coherent.
	0 - 20	Highly unsatisfactory or no evidence of knowledge or understanding of the subject or taught concepts; facts reproduced in a disjointed or decontextualised manner; fails to address the outcomes addressed by the brief; typically ignores important sources in development of work and data/evidence inappropriately used; weak technical and practical competence hampers ability to demonstrate/communicate achievement of outcomes.