SKEMA GLOBAL BBA SYLLABUS

CAMPUS: Sophia Antipolis
ACADEMIC YEAR: 2023/2024

COURSE CODE MTH1702	COURSE NAME BUSINESS AND ECONOMICS CALCULUS		
Credits	US Credits 3 / ECTS Credits 6		
Student Workload	Contact Hours	Personal and/or Teamwork	Evaluation
	39	120	6
Teaching Language	English		
Co/Prerequisite	None		
Discipline	Economics		
Course Manager	Audrey Dalmasso - audrey.dalmasso@skema.edu		
Course Description	To provide the students with the basic concepts and techniques of differential and integral calculus, as well as an elementary knowledge of matrix algebra, applied to business, economics, management and the social sciences. There will be a strong emphasis on methodology.		
Learning Outcomes	*Knowledge and Understanding (subject specific) - The student is expected to:* Precalculus review. Introduction to Matrices. Functions, graphs and limits and continuity. Differentiation and its applications. Applications of the derivative. Exponential and logarithmic function. Integration and its applications: Antiderivatives. Techniques of integration, Definite integrals. Markov Chains		
Course included in AACSB Assurance of Learning	No If Yes, enter the LO(s):N/A		
Transferable Competences	☐ Sustainability ☐ Ethics ☐ Artificial Intelligence ☐ Technological Agility ☐ Communication ☒ Research Methods ☒ Other	Mathematics	

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Teaching Methods	☒ Lectures ☐ Blended Learning ☐ Guided Personal Work ☒ Autonomous Personal Work	☐ Case Study ☐ Project ☐ Seminar ☐ Other *Please specify*
Student Assessment	Written Examination Midterm exam Final Exam	Coefficient % 35% 45%
	Continuous Assessment: Test in class MCQs on K2	Coefficient % 20% *Bonus points on the Test in class*
Grading System	Please refer to the Academic Regulations for the grading system used in the BBA Program and further details and for information concerning absences, participation in class, plagiarism, etc.	
References / Books	Required for the course *Enter a brief reference to any required reading*	Recommended references College Mathematics for Business, Economics, Life Sciences and Social Sciences, R. Barnett, M. Ziegler, K. Byleen, Ed. Pearson, Global ed., 13th ed.
Online reference material	Required for the course Additional readings and source materials will be provided each week in K2.	Recommended references

	COURSE CONTENT
Session:	**Contents:**
Session 1 Asynchronous (K2)	Introduction to Matrices & Operations
Session 2 F2F	Augmented Matrices **+ MCQ on K2**
Session 3 F2F	Matrices: Leontief Input-Output Analysis Markov Chains
Session 4 F2F	Markov Chains 1.2: Graph of equations; 1.3: Line in the plane and slope 2.8: Related rates. 1.1: The Cartesian plane and the distance formula. 2.1: The derivative and the slope of a graph. 2.2: Some rules for differentiation.
Session 5 F2F	2.3: Rates of change: velocity and marginals. 2.4: The product and quotient rules. 2.5: The chain rule. 3.5: Business and economics applications - Marginal Cost/Revenue/Profit (Introduction)
Session 6 F2F	3.5: Business and economics applications - Marginal Cost/Revenue/Profit - Price Elasticity of Demand 3.2: Extrema and first derivative test. Optimization with one variable

Session 7 Asynchronous (K2)	2.7: Implicit differentiation 4.1: Exponential functions 4.2: Natural exponential functions. 4.4: Logarithmic functions. 4.5: Derivatives of logarithmic functions. 4.3: Derivatives of exponential functions **+ MCQ on K2**
Session 8 (Exam and Lecture)	**Test in class (1h)** 4.6: Exponential growth and decay. 3.1: Increasing and decreasing functions. Compound interest 3.4: Optimization problems: optimization with constraint and Lagrange
Session 9 F2F	3.4: Optimization problems: optimization with constraint and Lagrange
Session 10 F2F	3.4: Optimization problems: Cobb-Douglas function. 5.1: Antiderivatives and indefinite integrals
Exam	Midterm test
Session 11 F2F	5.1: Antiderivatives, indefinite integrals 5.2: The general power rule.
Session 12 Asynchronous (K2)	5.3: Exponential and logarithmic integrals. 5.1 Definite integrals Gini Index **+ MCQ on K2**
Session 13 F2F	Review Session
Exam	Final Exam

COMPETENCY BASED APPROACH

Competency	**Learning objective(s): by the end of this course students should be able to…**	**Assessment**	**Marking criteria**
Use digital tools	N/A	N/A	N/A
Use data for analysis purposes	Apply analytical methods.	Assignments	detailed in class assessment
Communicate orally and in writing	Translate a text into mathematical language. Interpret the results applied to business, economics, management and the social sciences	Assignments	detailed in class assessment
Positioning within a professional field	N/A	N/A	N/A
Act responsibly within a business organization	N/A	N/A	N/A
Understand the business world	N/A	N/A	N/A
Use management techniques and tools	N/A	N/A	N/A

ECOLOGICAL TRANSITION

Please detail here how the ecological transition is explored in this course: (concepts, activities, group work, project, …)