



**SCHOOL OF ECONOMICS, FINANCE AND BANKING (SEFB)
UUM COLLEGE OF BUSINESS
UNIVERSITY UTARA MALAYSIA**

No.	Information on Course									
1.	Course Name : INTRODUCTION TO MATHEMATICAL ECONOMICS									
2.	Course Code: BEEQ1013									
3.	Name(s) of Academic Staff: NORZITA JAMIL ZALILA OTHMAN									
4.	Rationale for the inclusion of the course in the programme: This course is one of the core courses to be taken by BSc. (Econ) programme students. This course provides students with relevant mathematical knowledge and skills needed to solve economic problems.									
5.	Semester/Year Offered: 1/1									
6.	Total Student Learning Time (SLT)	Face to face					Online Learning		SLPA	TLT
	TL = Traditional Lecture T = Tutorial P = Practical SCL/O = Student Cantered Learning/Others A = Assessment OT= Online Teaching Learning OA = Online Assessment SLPA= Self Learning Preparation and Assessment TLT = Total Learning Time	TL	T	P	SCL/O	A	OT	OA		
		15	0	0	19	4	8	5	69	120
7.	Credit Value: 3									
8.	Pre-requisite (if any): NONE									

9.		<p>Objective(s) of Course :</p> <p>After completing this course, students should be able to:</p> <ul style="list-style-type: none"> i. Be able to distinguish the basic concepts, rules, and principles of mathematics. ii. Be able to apply relevant mathematical tools to solve economic problems. iii. Be able to analyse economic models.
10.		<p>Course Learning Outcomes:</p> <p>Upon completion of the course, students are able to</p> <ul style="list-style-type: none"> i. Explain the basic concepts, rules, and principles of mathematics on economic problems (C2). ii. Solve economic problem using relevant mathematical tools (C3, A5). iii. Demonstrate the application of mathematical tools in solving economic problems (C3, A3, P5). <p>Refer Appendix 1</p>
11.		<p>Transferable Skills:</p> <p>Knowledge, Problem Solving and Communication skill</p> <p>Refer Appendix 2</p>
12.		<p>Teaching-learning and assessment strategy:</p> <p>Mixed method between teacher-centred and student-centred. For the assessment strategy it is a continuous assessment.</p>
13.		<p>Synopsis:</p> <p>This course is the first course in mathematics for economic students. It teaches students some relevant mathematical concepts, rules, principles, and techniques. It is intended to provide students with the knowledge and skills of using mathematical techniques in solving and analysing economic problems.</p>
14.		<p>Mode of Delivery:</p> <p>Traditional Lectures, Discussion, Student Centred Learning (Assignments) and online teaching.</p>
15.		<p>Assessment Methods and Types:</p> <p>Coursework – 100%</p> <ul style="list-style-type: none"> - Assignment 1 – Problem Solving – 15% - Assignment 2 – Problem Solving – 15% - Assignment 3 – Problem Solving – 15% - Assignment 4 – Problem Solving – 15% - Assignment 5 – Problem Solving 15%/presentation 25%– (40%) <p>Refer Appendix 3</p>

16.	Mapping of the course/module to the Programme Aims			
	Programme Aims	Course Learning Outcomes		
		1	2	3
The aims of Bachelor of Sciences in Economics [B.Sc (HONS)] are to produce graduates with a broad knowledge of economics, good analytical skills, as well as inculcating positive personal characteristics.	√	√	√	
17.	Mapping of the course/module to the Programme Learning Outcomes			
	Programme Learning Outcomes Refer Appendix 5	Course Learning Outcomes		
		1	2	3
	To explain the concepts and theories related to economics.	√		
	To apply the concepts, tools, and techniques of economics.			
	To demonstrate interaction skills with society and stakeholders.			
	To satisfy the relevant professional ethical code of conduct.			
	To communicate effectively in oral and writing, possess leadership skills and be able to work in groups at any levels.			√
	To analyse critically for effective decision making.		√	
	To utilise economic knowledge and ICT skills for lifelong learning process.			
To demonstrate managerial skills and entrepreneurial thrust.				
18.	Content outline of the course/module and the SLT per topic			

Topic	Learning Outcomes	Face to Face				OL	SL	TLT
		TL	T	P	SCL /O			
1. Introduction 1.1 Mathematics and its Importance 1.2 Mathematical Economics vs Non Mathematical Economics 1.3 Relations Among Mathematical Economics, Statistics, and Econometrics	1	1			1	1	3	6
2. Fundamentals of Algebra 2.1 The Set of Real Numbers 2.2 Polynomials 2.3 Factoring Polynomials 2.4 Rational Expressions 2.5 Integral Exponents 2.6 Solving Equations 2.7 Rational Exponents and Radicals 2.8 Quadratic Equations 2.9 Inequalities and Absolute Value	1, 2	4			3	2	9	18
3. Functions and Their Graphs 3.1 Functions and Their Graphs 3.2 The Algebra of Functions 3.3 Linear Functions 3.4 Quadratic Functions 3.5 Functions and Mathematical Models	1, 2	2			3	1	6	12
4. Exponential and Logarithmic Functions 4.1 Exponential Functions 4.2 Logarithmic Functions 4.3 Exponential Functions as Mathematical Models	1, 2	1			1	1	3	6
5. Matrices 5.1 Matrix Operation 5.2 The Laws of Matrix Operations 5.3 Identity Matrix 5.4 Transposition 5.5 The Inverse of a Square Matrix 5.6 Solving a Linear Equation System Using the Inverse Matrix Method 5.7 Solving a Linear Equation System Using Cramer's Rule	1, 2,3	2			3	1	6	12
6. The Derivative 6.1 Limits 6.2 One-Sided Limits and Continuity 6.3 The Derivative 6.4 Basic Rules of Differentiation 6.5 The Product and Quotient Rules; Higher-Order Derivatives 6.6 The Chain Rule	1, 2,3	3			4	2	9	18

6.7 Differentiation of Exponential and Logarithmic Functions 6.8 Marginal Functions in Economics								
7. Applications of the Derivative 7.1 Applications of the First Derivative 7.2 Applications of the Second Derivative 7.3 Optimization 7.4 Economic Application	1, 2,3	2		4		6	12	
		15	0	0	19	8	42	84

Student Learning & Assessment	Face to Face	Online Learning	Online Assessment	SLPA	TLT
Course Delivery and Preparation	34.0	8.0		42.0	84.0
Coursework 60%	1.5		5	16	22.5
Final Examination 40%	2.5		0	11.0	13.5
Total Notional Hours	38	8	0	74	120
Credit Hours	3				

Main References:

Tan, S.T. (2013). *Applied Mathematics for the Managerial, Life, and Social Sciences*. (6th ed.). Canada: Cengage Learning.

Additional References:

Chiang, A. C. & Wainwright, K. (2005). *Fundamental Methods of Mathematical Economics*. (4th ed.). Singapore: McGraw-Hill.

Selamah, M., Bakti, H. B., Aznita, S., & Nor Fadzlin, M. B. (2011). *Matematik Untuk Ekonomi*. (2nd ed.). Singapore: Cengage Learning.

Hess, P. (2002). *Using Mathematics in Economic Analysis*. Upper Saddle River: Prentice Hall.