



**Faculty of Business**  
**Bachelor of Business Administration in Marketing**

**Learning Module Outline**

Academic Year	2023 / 2024	Semester	1
Module Code	MATH2100-212		
Learning Module	Business Mathematics		
Pre-requisite(s)	Nil		
Medium of Instruction	English		
Credits	3	Contact Hours	45
Instructor	Dr. Siu Wai Cheong	Email	siuwaich@mpu.edu.mo
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**MODULE DESCRIPTION**

This module emphasizes the mathematics required in general business processes. It is designed to prepare students for the mathematical and analytical applications most useful in subsequent business and economics courses. Topics include: functions and graphs, mathematics of finance, matrix algebra, linear programming, and basic calculus.

**MODULE INTENDED LEARNING OUTCOMES (ILOS)**

On completion of this learning module, students will be able to:

M1.	Explain the concepts of mathematics;
M2.	Explain the rationales behind the mathematical formulae;
M3.	Apply mathematical skills to solve simple real-world problems;
M4.	Formulate simple real-world problems into mathematics problems;
M5.	Demonstrate the ability to think abstractly, critically and mathematically.

These ILOs aims to enable students to attain the following Programme Intended Learning Outcomes (PILOs):

PILOs of Marketing Program	M1	M2	M3	M4	M5
P1. Explain the core concepts, values and skills - Students are able to apply the marketing principles, concepts, theories in analyzing the changing business environment.					



P2. Apply appropriate tools and technologies - Students are able to demonstrate using related tools, technology and skills to generate proposals and solutions.	✓	✓	✓	✓	✓
P3. Proceed lifelong learning - Students are able to apply self and independent learning to leverage learned knowledge in practical life.	✓	✓	✓	✓	✓
P4. Adopt leadership approaches - Students are able to develop collaborative groups, synergy teams in achieving objectives and shared goals.					
P5. Demonstrate and practice legal and ethical values - Students are able to identify professional ethics from broad business practices.					
P6. Effective communication skills - Students are able to communicate and present ideas effectively.					
P7. Critical thinking - Students are able to apply self-understanding and analysis of critical perspectives to issues in broad conditions for problem solving.	✓	✓	✓	✓	✓
P8. Intercultural competence - Students are competent to associate in a diversified social and global community.					

#### MODULE SCHEDULE, COVERAGE AND STUDY LOAD

Week	Content Coverage	Contact Hours
1	1. Functions and Graphs 1.1 Functions 1.2 Elementary Functions: Graphs and Transformations 1.3 Quadratic Functions 1.4 Polynomial and Rational Functions 1.5 Exponential Functions 1.6 Logarithmic Functions	3
2, 3	2. Mathematics of Finance 2.1 Simple Interest 2.2 Compound and Continuous Compound Interest 2.3 Future Value of an Annuity; Sinking Funds 2.4 Present Value of an Annuity; Amortization	6
4, 5	3. Systems of Linear Equations; Matrices 3.1 Review: Systems of Linear Equations in Two Variables 3.2 Systems of Linear Equations and Augmented Matrices 3.3 Gauss-Jordan Elimination 3.4 Matrices: Basic Operations 3.5 Inverse of a Square Matrix 3.6 Matrix Equations and Systems of Linear Equations	6
6	4. Linear Inequalities and Linear Programming 4.1 Linear Inequalities in Two Variables 4.2 Systems of Linear Inequalities in Two Variables 4.3 Linear Programming in Two Dimensions: A Geometric Approach	3



7	Test	3
8, 9	8. Limits and the Derivative 8.1 Introduction to Limits 8.2 Infinite Limits and Limits at Infinity 8.4 The Derivative 8.5 Basic Differentiation Properties 8.7 Marginal Analysis in Business and Economics	6
10	9. Additional Derivative Topics 9.2 Derivatives of Exponential and Logarithmic Functions 9.3 Derivatives of Products and Quotients 9.4 The Chain Rule	3
11, 12	10. Graphing and Optimization 10.1 First Derivative and Graphs 10.2 Second Derivative and Graphs 10.4 Curve-Sketching Techniques 10.5 Absolute Maxima and Minima 10.6 Optimization	6
13, 14	11. Integration 11.1 Antiderivatives and Indefinite Integrals 11.2 Integration by Substitution 11.3 Differential Equations; Growth and Decay 11.4 The Definite Integral 11.5 The Fundamental Theorem of Calculus	6
15	Final Examination	3

## TEACHING AND LEARNING ACTIVITIES

In this learning module, students will work towards attaining the ILOs through the following teaching and learning activities:

Teaching and Learning Activities	M1	M2	M3	M4	M5
T1. Lecture	✓	✓	✓	✓	✓
T2. Classwork (exercises/assignments)	✓	✓	✓	✓	✓

## ATTENDANCE

Attendance requirements are governed by the Academic Regulations Governing Bachelor's Degree Programmes of the Macao Polytechnic University. Students who do not meet the attendance requirements for the learning module shall be awarded an 'F' grade.

## ASSESSMENT

In this learning module, students are required to complete the following assessment activities:

Assessment Activities	Weighting (%)	ILOs to be Assessed
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A1. Classwork exercises/assignments (graded)	20%	M1 – M5
A2. Test (graded)	30%	M1 – M5
A3. Final examination (graded)	50%	M1 – M5
Total	100%	

The assessment will be conducted following the University's Assessment Strategy (see [www.mpu.edu.mo/teaching\\_learning/en/assessment\\_strategy.php](http://www.mpu.edu.mo/teaching_learning/en/assessment_strategy.php)). Passing this learning module indicates that students will have attained the ILOs of this learning module and thus acquired its credits.

#### MARKING SCHEME

	Assessment Task	Criterion	Excellent	Very Good, Good	Satisfactory	Pass	Fail
			A, A-	B+, B, B-	C+, C, C-	D+, D	F
			88% - 100%	73% - 87%	58% - 72%	50% - 57%	0 – 49%
1.	Classwork (exercises/assignments)	Demonstrate the understanding of the subjects, practice and improve problem solving skills.					
2.	Test	Demonstrate the understanding of the subjects and the ability to apply the methods learnt in problem solving.					



3.	Final Exam / Re-sit Exam	Demonstrate the understanding of the subjects and the ability to apply the methods learnt in problem solving.	High	Significant	Moderate	Basic	Not even reaching marginal levels
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### REQUIRED READINGS

Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen, and Christopher J. Stocker, 2019, *College Mathematics for Business, Economics, Life Sciences and Social Sciences*, 14th Edition, Pearson Education

### REFERENCES

Nil

### STUDENT FEEDBACK

At the end of every semester, students are invited to provide feedback on the learning module and the teaching arrangement through questionnaires. Your feedback is valuable for instructors to enhance the module and its delivery for future students. The instructor and programme coordinators will consider all feedback and respond with actions formally in the annual programme review.

### ACADEMIC INTEGRITY

The Macao Polytechnic University requires students to have full commitment to academic integrity when engaging in research and academic activities. Violations of academic integrity, which include but are not limited to plagiarism, collusion, fabrication or falsification, repeated use of assignments and cheating in examinations, are considered as serious academic offenses and may lead to disciplinary actions. Students should read the relevant regulations and guidelines in the Student Handbook which is distributed upon the admission into the University, a copy of which can also be found at [www.mpu.edu.mo/student\\_handbook/](http://www.mpu.edu.mo/student_handbook/).