

Macao Polytechnic Institute

School of Business

Bachelor of Management

Module Outline

Academic Year 2021/2022

Semester 1

Learning Module	Business Mathematics			Class Code	MATH2100-212
Pre-requisite(s)	Nil				
Medium of Instruction	English			Credit	3
Lecture Hours	45 hrs	Lab/Practice Hours	0 hr	Total Hours	45 hrs
Instructor	Siu Wai Cheong		E-mail	siuwaich@ipm.edu.mo	
Office	M519, Meng Tak Building		Telephone	8599-3331	

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.

Learning Outcomes

After completing the module, students will be able to:

1. explain the concepts of mathematics;
2. explain the rationales behind the mathematical formulae;
3. apply mathematical skills to solve simple real world problems;
4. formulate simple real world problems into mathematics problems;
5. demonstrate the ability to think abstractly, critically and mathematically.

Alignment of Program and Module Intended Learning Outcomes

PILOs of Management Program	MILOs
1. Integrate contemporary Management theories and business disciplines relevant to general business practices.	NA
2. Apply critical thinking and logical analysis skills and techniques to resolve management issues.	1-5
3. Utilize appropriate written and spoken forms to communicate effectively and professionally with stakeholders in various cultural environments.	NA
4. Demonstrate leadership in a team and respecting the rights of others irrespective of their cultural background, race or gender in order to solve unpredictable problems in the field.	NA
5. With the help of mathematical and statistical skills, utilize the latest empirical findings and academic studies to support the recommendation of business projects or reports.	1-8
6. Recommend an appropriate course of action by ethically examining economic, environmental, political, legal and regulatory contexts of global business practices.	NA
7. Interpret and utilize Management information or business software for internal control, planning, performance evaluation, and coordination to improve efficiency and effectiveness in the business process.	NA

Content

Chapters	Duration
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 hours
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 hours

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 hours
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 hours
Test 1	3 hours
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	3 hours
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 hours
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 hours
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 hours
Test 2	3 hours
Final Examination	3 hours
Total:	45 hours

The contents would be modified in accordance with the actual progress in class in the light of students' performance and their progress of understanding under the instructor's discretion. Students should read the required chapter(s) BEFORE coming to class and are responsible for ALL materials covered in class AND in the textbook.

Teaching Method

This module is primarily conducted by means of lectures on concepts of mathematics. Classwork exercises/assignments and tests will be used to assess students' understanding of the teaching materials, as well as to monitor students' progress and commitment to the module.

TLA1: Mathematical knowledge is delivered primarily by lectures with the aid of powerpoint slides.

TLA2: In-class discussion will be held to ensure students' understanding of the topics.

TLA3: Classwork exercises/assignments will be given.

In order to achieve the outcomes of this module, students are expected to perform the following learning tasks:

- Read and prepare assigned materials before class.
- Review and work on exercises after class to evaluate understanding.
- Prepare for tests and final exam.
- Seek advice from instructor for difficulties encountered.
- Form study group to learn and practice skills.

Attendance

Attendance requirements are governed by the "Academic Regulations Governing Bachelor's Degree Programmes of Macao Polytechnic Institute". Students who have less than the required attendance for the enrolled module are not eligible to attend the final and re-sit examinations and will be given an "F" as their final grade.

Assessment

This module is graded on a 100 point scale, with 100 being the highest possible score and 50 being the passing score.

	Activities used to assess students' achievement of MILOS	Percentage
1.	Classwork exercises/assignments (graded)	20%
2.	Tests (graded)	30%
3.	Final examination (graded)	50%
	Total percentage:	100%

Plagiarism Policy

When a student submits an assignment, he or she has a duty to ensure that his or her assignment has been checked by *Turnitin* software, and the similarity score given by *Turnitin* software cannot be higher than 30%. However, a special case can be determined by the instructor.

Teaching Material(s)

Textbook

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.

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