澳門理工大學
Universidade Politécnica de Macau
Macao Polytechnic University

FACULTY OF BUSINESS

BACHELOR OF ACCOUNTING

LEARNING MODULE OUTLINE

Academic Year	2024 / 2025	Semester	1
Module Code	MATH2100-215		
Learning Module	Business Mathematics		
Pre-requisite(s)	Nil		
Medium of Instruction	English		
Credits	3	Contact Hours	45
Instructor	Natalie Pang Weng Sun	Email	wspang@mpu.edu.mo
Office	M524, Meng Tak Building	Office Phone	85993324

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	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**	**M7**	**M8**
P1. Integrate the contemporary theories, principles of accounting and business disciplines relevant to general business practice.								
P2. Assess general business scenarios with mathematical and statistical skills.	✓	✓	✓	✓	✓	✓	✓	✓

P3. Apply critical thinking and logical analysis skills and techniques to solve business problems.	✓	✓	✓	✓	✓	✓	✓	✓
P4. Interpret and analyze accounting information for internal control, planning, performance evaluation, and coordination to continuously improve business process.								
P5. Apply accounting or business software for business analysis.								
P6. Develop queries to assess management information from database to improve efficiency and effectiveness.								
P7. Synthesize the latest requirement of international accounting and auditing standards in preparing financial statements and auditing reports.								
P8. Utilize appropriate written and spoken forms to communicate effectively with stakeholders in various cultural environment.								
P9. Recommend an appropriate course of action by ethically examining the economic, environmental, political, legal and regulatory contexts of global business practice.								
P10. Utilize the latest empirical findings and academic studies to support the recommendation of business projects.								

MODULE SCHEDULE AND COVERAGE

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	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	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	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	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	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 Exam	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	✓	✓	✓	✓	✓

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
A1. Classwork exercises	20%	M1 – M5
A2. Test	30%	M1 – M5
A3. Final examination	50%	M1 – M5

The assessment will be conducted following the University's Assessment Strategy (see 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

The University Grading System:

Letter Grade	Mark Ranges	Grade Point	Grade Definition
A A-	93 – 100 88 – 92	4.0 3.7	Excellent
B+	83 – 87	3.3	Very Good
B B-	78 – 82 73 – 77	3.0 2.7	Good
C+ C C-	68 – 72 63 – 67 58 – 62	2.3 2.0 1.7	Satisfactory
D+ D-	53 – 57 50 – 52	1.3 1.0	Pass
F	0 – 49	0	Fail

TEXTBOOK

Barnett, R.A., Ziegler, M. R., Byleen, K. E., & Stocker, C. J. (2019). *College Mathematics for Business, Economics, Life Sciences and Social Sciences*, 14th Edition. Pearson Education.

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/.