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**SYLLABUS**  
**PROGRAM OF PUBLIC MANAGEMENT AND POLICY IN ENGLISH**  
**(E-PMP)**

LEVEL OF EDUCATION: UNDERGRADUATE

TYPE OF EDUCATION: FULL-TIME

**1. GENERAL INFORMATION**

- *Course title (Vietnamese):* ***Toán cho các nhà kinh tế***
- *Course title (English):* ***Mathematics for Economics***
- *Course code:* ***EPMP1126***
- *Knowledge group:* ***General Education***
- *Credit:* ***3***
- *Prerequisite:* ***No***

**2. THE DEPARTMENT IN CHARGE: Social Management**

**3. DESCRIPTION**

This course consists of two parts, linear algebra and calculus. The first part will cover: introduction of system of linear equations (solve linear equation by Gaussian elimination), matrix, determinants and the use of matrix in solving a large equation system, and some properties of matrix that will be used late in the course. The second part focuses on differentiation and integration. The program will focus on the application of this knowledge in economics and business, the second half of the second part will be an introduction to the knowledge of the multivariable function, the maximum and minimum of the multivariable function, and its applications.

**4. REFERENCES**

**Required textbooks**

Chiang, A.C, *Fundamental Methods of mathematical Economics*, McGraw- Hill, 2005, 4<sup>th</sup> edition

Hoffmann Laurence D, *Applied calculus for business, economics and the social and life sciences*, McGraw- Hill, 2005, 9<sup>th</sup> edition

**Other references**

Hoffmann Laurence D, *Student's solutions manual to accompany calculus for business and the social and life sciences*, McGraw - Hill/Higher Education, 2007, Brief. 9<sup>th</sup> edition

**5. COURSE OBJECTIVES:**

<b>Goal (Gx)</b>	<b>Description</b>	<b>PLO</b>	<b>Level</b>
<b>[1]</b>	<b>[2]</b>	<b>[3]</b>	<b>[4]</b>
G1 (Knowledge)	Understand and apply knowledge of econometrics to describe, explain, analyze and evaluate socio-economic problems and decision-making in business and management.	KT2	3
G2 (Skill)	Have skills to manipulate mathematical tools to solve large-scale economic problems and optimize decisions in English	KN1 KN5	3 3
G3 (L)	Self-study to work and to create capacity to work for a lifetime . Have a sense of responsibility, cooperation, and autonomy at work; take responsibility for your own work results	NLTC2	4

**6. COURSE LEARNING OUTCOME:**

<b>Goal</b>	<b>CLO (CLOx.x)</b>	<b>Description</b>	<b>Level</b>
<b>[1]</b>	<b>[2]</b>	<b>[3]</b>	<b>[4]</b>
G1 (Knowledge)	<b>CLO 1.1</b>	Understand and apply knowledge of econometrics to describe, explain, analyze and evaluate socio-economic problems.	<b>3</b>
	<b>CLO 1.2</b>	Use mathematical knowledge in problem solving and decision-making in business and	<b>3</b>

		management.	
G2 (Kỹ năng)	CLO 2.1	Have skills to manipulate mathematical tools to solve large-scale economic problems and optimize decisions in English	3
	CLO 2.2	Optimizing business and management decisions in English	3
G3 (Mức tự chủ và trách nhiệm)	CLO 3.1	Self-study to work and to create capacity to work for a lifetime	4
	CLO 3.2	Have a sense of responsibility, cooperation, and autonomy at work; take responsibility for your own work results	4

## 7. COURSE ASSESSMENT

Form of evaluation	Content	Time	CLO	Evaluation criteria	Ratio (%)
[1]	[2]	[3]	[4]	[5]	[6]
Evaluate the learning process		From week 1 to week 12	CLO1.1, CLO1.2, CLO3.1, CLO3.2	- Full level of attendance - Level of participation in answering lecturers' questions (number of times and quality of answers)	10%
Mid-term test	Chapter 1- 4	Week 6	CLO1.1, CLO1.2, CLO2.1, CLO2.2, CLO3.1, CLO3.2	The level of completion of the individual test (on time, the quality of the assignment that associated with the level of knowledge, skills and the ability to autonomy and take responsibility of the course learning outcomes)	20%
Mid term test	Chapter 5-7	Week 10	CLO1.1, CLO1.2, CLO2.1,	The level of completion of the individual test (on time, the quality of the assignment is associated with the level of knowledge, skills	20%

			CLO2.2, CLO3.1, CLO3.2	and the ability to autonomy and take responsibility of the course learning outcomes)	
Final exam	Chapter 1- 8		CLO1.1, CLO1.2, CLO2.1, CLO2.2, CLO3.1, CLO3.2	The level of completion of the individual test at the end of the term (The quality of the test is linked to the attainment of knowledge, skills and the ability to autonomy and take responsibility of the course outcome standards)	50%

\*The course uses turnitin software to assess academic integrity

## 8. TEACHING PLAN

Week/ Session	Contents	CLO	Activities	Assessment
[1]	[2]	[3]	[4]	[5]
1	Chapter 1: Systems of linear equations - Introduction to Systems of Linear Equations - Gaussian Elimination and Gauss-Jordan Elimination - Applications of Systems of Linear Equations	CLO1.1, CLO1.2, CLO2.1, CLO2.2, CLO3.1, CLO3.2	<b>Study at home:</b> Pre-study Chapter 1 <b>Teaching and learning in class</b> - Introduction about the course and how to evaluate the course - Lecture: 3 sessions - Class discussion (individual): 1 session	Evaluate the learning process, attitude, level of initiative and positivity in learning 10% - Individual test 01: 20% - Individual test 02: 20%
2-3	Chapter 2: Matrix - Operations with Matrices - Properties of Matrix operations - The Inverse of a Matrix	CLO1.1, CLO3.1, CLO3.2	<b>Study at home:</b> Pre-study Chapter 2 <b>Teaching and learning in class</b> -Lecture: 3 sessions -Class discussion	

			(individual): 1 session
4-5	Chapter 3: Determination - The determinant of the matrix - Determinants and Elementary Operations - Properties of determinants - Applications of the determinants	CLO1.1, CLO1.2, CLO2.1, CLO2.2, CLO3.1, CLO3.2	<b>Study at home:</b> Study in advance Chapter 3 <b>Teaching and learning in class</b> - Lecture: 3 sessions -Class discussion (individual): 1 session
6	Chapter 4: Differentiation - Average change - Instantaneous rate of change – differentiation - Common rules - Higher order derivatives  Test 1 (90')	CLO1.1, CLO3.1, CLO3.2	<b>Study at home:</b> Pre-study Chapter 4 <b>Teaching and learning in class</b> - Lecture: 3 sessions -Class discussion (individual): 1 session
7-8	Chapter 5: Application of the differentiation - Find maximum and minimum - Marginal and differentials - Implicit differentiation	CLO1.1, CLO1.2, CLO3.1, CLO3.2	<b>Study at home:</b> Pre-study Chapter 5 <b>Teaching and learning in class</b> - Lecture: 3 sessions -Class discussion (individual): 1 session
9	Chapter 6: Integration - Integrals - The common rules	CLO1.1, CLO3.1, CLO3.2	<b>Study at home:</b> Pre-study Chapter 6 <b>Teaching and learning in class</b> - Lecture: 3 sessions -Class discussion (individual): 1 session

10	<p>Chapter 7: Application of integration</p> <ul style="list-style-type: none"> <li>- Consumption surplus (CS) and producer surplus (PS)</li> <li>- Value (present and future) of cash flow (PV and FV)</li> </ul> <p>Test 2 (90 ')</p>	<p>CLO1.1, CLO1.2, CLO2.1, CLO2.2, CLO3.1, CLO3.2</p>	<p><b>Study at home:</b> Pre-study Chapter 7</p> <p><b>Teaching and learning in class</b></p> <ul style="list-style-type: none"> <li>- Lecture: 3 sessions</li> <li>-Class discussion (individual): 1 session</li> </ul>	
11+12	<p>Chapter 8: Functions with several variables</p> <ul style="list-style-type: none"> <li>- The concept</li> <li>- Partial derivatives</li> <li>- Total derivatives</li> <li>- Maximum–Minimum Problems</li> <li>- Application</li> </ul>	<p>CLO1.1, CLO1.2, CLO2.1, CLO2.2, CLO3.1, CLO3.2</p>	<p><b>Study at home:</b> Pre-study Chapter 8</p> <p><b>Teaching and learning in class</b></p> <ul style="list-style-type: none"> <li>- Lecture: 3 sessions</li> <li>-Class discussion (individual): 1 session</li> </ul>	
13	<p>Final exam</p>	<p>CLO1.1, CLO1.2, CLO2.1, CLO2.2, CLO3.1, CLO3.2</p>	<p>Individual final exam: 90 minutes</p>	<p>Test: 50%</p>

## 9. COURSE REQUIREMENT

### 9.1. Rules of class participation

- Students are responsible for attending all classes. In any case of absence from school due to force majeure reasons, there must be sufficient and reasonable proofs.

- Students are responsible for actively read materials in advance, proactively preparing lessons before going to class according to the instructions and requests of lecturers.

- Students who skip more than 20% of the lessons of the subject will be considered as not complete the course and have to retake the course

- Students who miss the deadline of individual and group assignments submission will receive a score of zero for that assignment.
- Students will be randomly asked to answer questions during 12 sessions
- Regarding the communication between lecturers and students: Encourage students to participate in discussions (groups and individuals), give direct feedback to teachers about the content of the course, teaching and learning methods, teaching materials and handouts. Lecturers also encourage students to give feedback on the form, methods and contents of the tests to evaluate students' learning results. Students can communicate with lecturers in class, during office hours or via email. The valuable feedback from students contributes to improve the teaching and learning quality of the course

## **9.2. Rules of classroom behavior**

- The course is conducted on the principle of respect for students and lecturers. All behaviors that interfere with the teaching and learning process are strictly prohibited.
- Students need to actively participate in lectures through discussions with lecturers (answer and ask questions) and group discussions, presentations
- Students must go to school on time. Students who are late more than 10 minutes after class starts will not be able to attend the class.
- Do not make noise, disturbing other students in the learning process.
- Do not eat, drink, chew gum, use devices such as phones, music players during class.
- Laptops and tablets are only used for the purpose of recording lectures, calculating, doing exercises. Absolutely do not use them for other purposes.

*Hanoi, Date Month Year 20*

**DEAN OF FACULTY**

**(Signed)**

**UNIVERSITY PRINCIPAL**

**(Signed)**