MINISTRY OF EDUCATION AND TRAINING
NATIONAL ECONOMICS UNIVERSITY

THE SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

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): ***Xác suất thống kê***

- Course title (English): ***Probability & Statistics***

- Course code: ***EPMP1128***

- Knowledge group: ***General education***

- Credit: ***3***

- Prerequisite courses: ***No***

2. THE DEPARTMENT IN CHARGE: Economic management

3. DESCRIPTION

Behind the random nature of the numbers in production and business activities, there exists certain laws that expresses the basic nature of these variables as well as the relationship between the variables. The course introduces the statistical concepts, tools, and methods essential to business, economics, and related disciplines in finding and applying these laws in life and real business decision making. The focus of the course is more on ideas, reasoning, and logical thinking rather than on mathematical computation. The course includes two main areas in statistics: descriptive statistics and inferential statistics. Descriptive statistics include data collection, summary and interpretation using graphs and tables. Inferential statistics includes the selection and application of statistical tools to draw conclusions about population parameters. Topics include descriptive statistics, simple correlation and regression, probability, point and interval estimation, and statistical hypothesis testing.

4. REFERENCES

Required textbooks

Paul Newbold, William L.Carlson, Betty Thorne, Statistics for Business and Economics, 5th Edition, Prentice Hall, 2003. (Chapter 1 to 10, page 1 to 443; and Appendix table from 1 to 9, page 837 to 869)

Other references

Nguyen Cao Van, Tran Thai Ninh, Ngo Van Thu, Probability Theory and Mathematical Statistics Textbook, NEU publisher, 2012

5. COURSE OBJECTIVES :

Goal (Gx)	Description	PLO	Level
[1]	[2]	[3]	[4]
G1 (Knowledge)	Be able to understand and read the results from the figures, tables describing basic characteristics of the data set; classify the sample and the population; understands the random nature of the data and variables in practice and applies some basic knowledge of probability theory to be able to explain the main features of the dataset; understand the uncertain nature of these conclusions and the degree of uncertainty and some common distributional laws	KT2	3
G2 (Skill)	Have skills to apply some basic probability formulas to calculate the probability of an event; use information from the sample to draw conclusions about the population; have the skill in using pictures and tables to describe basic features of the data set in English; have skills in applying statistical probability tools to apply to real problems (in English)	KN1 KN5	3 3
G3 (Level of autonomy and responsibility)	Self-study in work to create labor capacity for life; have a sense of responsibility, cooperation, and autonomy at work; take responsible for the results of their own work.	NLTC2	4

6. COURSE LEARNING OUTCOME:

Goal	CLO (CLOx.x)	Description	Level
[1]	[2]	[3]	[4]

G1 (Knowledge)	CLO1.1	Understand and able to read the results from the figures and tables describing the basic characteristics of the data set	2
	CLO1.2	Be able to classify the sample and the population; Understand the random nature of data and variables in practice;	3
	CLO 1.3	Be able to apply some basic knowledge of probability theory to be able to explain the main features of the data set.	3
	CLO 1.4	Understand the uncertainty nature of these conclusions and the degree of uncertainty	2
	CLO 1.5	Understand some common distributional rules	2
G2 (Skill)	CLO2.1	Have skills in applying some basic probability formulas to calculate the probability of an event	3
	CLO2.2	Have skills in using information from the sample to draw conclusions about the population	3
	CLO2.3	Have skills in using pictures and tables to describe basic features of data sets in English	3
	CLO2.4	Have skills in applying statistical probability tools to apply to real problems (in English)	3
G3 (Level of autonomy and responsibility)	CLO3.1	Self-study in work to create labor capacity for life.	4
	CLO3.2	Have a sense of responsibility, cooperation, and autonomy at work; take responsibility for their 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	- Full class participation level.	10%

			CLO3.1 CLO3.2	- The level of lesson preparation from home (fully, thoroughly) - Level of participation in answering lecturers' questions (quantity and quality of answers) - Level of participation in questioning lecturers (quantity and quality of questions)	
Mid-term review	Chapter 1: Data and statistics Chapter 2: Descriptive statistics: tables and figures Chapter 3: Descriptive statistics: numerical measures Chapter 4: Introductio-n to Probability	Week 4	CLO1.1 CLO1.2 CLO1.3 CLO2.1 CLO3.1	The level of midterm test completion (quality of the test is associated with the attainment of knowledge, skills as well as the capacity of autonomy and self-responsibility for the learning outcomes of the course) ~~The level of midterm test completion (quality of the test is associated with the level of knowledge, skills and capacity to be autonomous and responsible for the~~	20%

				~~learning outcomes of the course)~~	
Mid-term review	Chapter 4: Introductio-n to Probability Chapter 5: Distribution of discrete random variables Chapter 6: Distribution l of continuous random variables	Week 8	CLO1.2 CLO1.3 CLO2.2 CLO2.3 CLO3.1 CLO3.2	The level of midterm test completion (quality of the test is associated with the attainment of knowledge, skills as well as the capacity of autonomy and self-responsibility for the learning outcomes of the course) ~~the level of knowledge, skills and capacity to be autonomous and responsible for the learning outcomes of the course)~~	20%
End-of-term evaluation	Chapter 7: Sample and Sample Distribution Chapter 8: Confidence interval estimation Chapter 9: Hypothesis testing Chapter 10: Inference		CLO1.2 CLO1.3 CLO1.4 CLO1.5 CLO 2.2 CLO2.3 CLO2.4 CLO3.1 CLO3.2	The level of completion of the individual test at the end of the term (The quality of the test is associated with the attainment of knowledge, skills as well as the capacity of autonomy and self-responsibility for the learning outcomes of the course)~~The level of completion of the final personal essay test (the quality of the test is asssociated with the level of knowledge,~~	50%

	with two population Chapter 11: Inference about variance			~~skills and capacity to be autonomous and responsible for the learning outcomes of the course~~	

* 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: Data and statistics** 1.1 Application in Economics and Business. 1.2 Data and data sources 1.3 Descriptive statistics vs inferential statistics **Chapter 2: Descriptive statistics** 2.1 With qualitative data 2.2 With quantitative data 2.3 Some forms of association	CLO1.1 CLO2.1	**Study at home:** Read Chapter 1 & 2 at home in advance **Teaching and learning in class** Introduction about the course and how to evaluate the course Lecture: 3 sessions Class discussion (personal): 1 session	
2	**Chapter 3: Descriptive statistics: numerical measures** 3.1 characteristics of location 3.2 Characteristics of variability 3.3 Characteristics of distribution form, outliers 3.4 Association between two variables	CLO1.1 CLO2.1 CLO3.1	**Study at home:** Read Chapter 3 at home in advance **Teaching and learning in class** Lecture: 3 sessions Class discussion (personal): 1 session	

3	**Chapter 4: Introduction to Probability** 4.1 Concepts 4.2 Event and its probability 4.3 Some formulas of probability 4.4 Conditional Probability 4.5 Bayes' Theorem	CLO1.3 CLO2.1 CLO3.1	**Study at home:** Read Chapter 4 at home in advance **Teaching and learning in class** Lecture: 3 sessions Class discussion (personal): 1 session	Assessment of the learning process, attitude, level of initiative and positivity in learning 10% Mid-term test 1: 20% Mid-term test 2: 20%
4	**Chapter 5: Discrete Probability Distribution** 5.1 Random variables 5.2 Discrete probability distribution 5.3 Expectation and variance 5.4 Binomial Distribution 5.5 Poisson Distribution	CLO1.2 CLO1.3 CLO2.1 CLO3.1	**Study at home:** Read Chapter 5 at home in advance **Teaching and learning in class** Lecture: 3 sessions Mid-term test 1 20%	
5	**Chapter 6: Continuous Probability Distribution** 6.1 Uniform distribution 6.2 Normal Distribution 6.3 Some other distributions	CLO1.2 CLO2.1 CLO2.2 CLO3.1	**Study at home:** Read Chapter 6 at home in advance **Teaching and learning in class** Lecture: 3 sessions Class discussion (personal): 1 session	

6	**Chapter 7: Sample and Sampling Distribution** 7.1 Example 7.2 Random sample 7.3 Point Estimation 7.4 Sampling distribution 7.5 Some properties of point estimation	CLO1.3 CLO2.1, CLO3.1, CLO3.2	**Study at home:** Read Chapter 7 at home in advance **Teaching and learning in class** Lecture: 3 sessions Class discussion (personal): 1 session	
7	**Chapter 8: Estimating confidence intervals** 8.1 Estimate the population mean: if the variance is known 8.2 Estimate the population mean - variance is unknown	CLO1.2 CLO1.3 CLO2.2 CLO2.3 CLO3.1 CLO3.2	**Study at home:** Read Chapter 8 at home in advance **Teaching and learning in class** Lecture: 3 sessions Class discussion (personal): 1 session	
8	**Chapter 8: confidence interval estimation** 8.3 Determination of sample size 8.4 Confidence interval for population proportion 8.5 Practical examples	CLO1.2 CLO1.3 CLO2.2 CLO2.3 CLO3.1 CLO3.2	**Study at home:** Read Chapter 8 at home in advance **Teaching and learning in class** Lecture: 3 sessions Mid-term test 2 20%	

9	**Chapter 9: Hypothesis testing** 9.1 Hypothesis 9.2 Type I error and Type II error 9.3 Population mean - if variance is known	CLO1.4 CLO1.5 CLO2.3 CLO2.4 CLO3.1 CLO3.2	**Study at home:** Read Chapter 9 at home in advance **Teaching and learning in class** Lecture: 3 sessions Class discussion (personal): 1 session	
10	**Chapter 9: Hypothesis testing** 9.4. Population mean - where variance is unknown 9.4 Population proportion 9.5 Determination of sample size 9.6 Practical examples		**Study at home:** Read Chapter 9 at home in advance **Teaching and learning in class** Lecture: 3 sessions Class discussion (personal): 1 session	
11	**Chapter 10: Inference with two populations** 10.1 Inference about the mean of two populations 10.2 Inference about the proportions of two population	CLO1.3 CLO1.5 CLO2.4 CLO3.1 CLO3.2	**Study at home:** Read Chapter 10 at home in advance **Teaching and learning in class** Lecture: 3 sessions Class discussion (personal): 1 session	

12	**Chapter 11: Inference about variance** 11.1 Inference of Variance of a population 11.2 Inference of Variance of two populations **Chapter 12: Testing about independence** 12.1 Goodness of fit test H 12.2 Testing of independence Course review	CLO1.3 CLO1.5 CLO2.4 CLO3.1 CLO3.2	**Study at home:** Read Chapter 10 at home in advance **Teaching and learning in class** Lecture: 3 sessions Class discussion (personal): 1 session	
	Final exam	CLO1.2 CLO1.3 CLO1.4 CLO1.5 CLO 2.2 CLO2.3 CLO2.4 CLO3.1 CLO3.2	Essay exam: 90 minutes	Final exam 50%

9. COURSE REQUIREMENT

9.1. Rules of class participation

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

- Students are responsible for actively researching documents, proactively preparing lessons before going to class according to the instructions and requests of lecturers.

- Students who miss more than 20% of the lessons of the subject will be considered as not completing the course and have to enroll again.

- Students who submit individual and group assignments late compared with the prescribed time of the instructors will receive a score of 0 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 module 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	**UNIVERSITY PRINCIPAL**
(Signed)	**(Signed)**