Course Name : Probability and Statistics

Course Code	Course Type	Regular Semester	Lecture (hours/week)	Seminar (hours/week)	Lab. (hours/week)	Credits	ECTS
CMP 227	B	Fall	3.00	0.00	1.00	3.50	5.00

Lecturer	Elda Dollija, PhD
Assistant	
Course language	Albanian
Course level	Bachelor
Description	The aim of the course Probability and Statistics is to provide students with the necessary knowledge about the basic concepts of statistics and probability. In this course there is a combination of theoretical aspects with the practical aspect, increasing the ability of students for an efficient use of statistical analysis. The program is explained through units dealing with basic knowledge on: statistical data, density distribution, localization and variation indicators, variance, linear regression, correlation analysis, probability, etc.
Objectives	Some of the objectives of the course are: - to give students basic concepts in the field of statistics; - to acquaint students with practical statistical applications; - to acquire knowledge in statistics in order to solve exercises at the conceptual and applied level. - To train students in solving various statistical problems.
Core Concepts	Data, measurements, descriptive statistics, probability, distributions, localization and variation indicators, variance, linear regression, hypothesis control.

Course Outline

Week	Topic
1	Topic: Introduction to Statistics. In this topic students will be introduced to the subject of statistics with basic concepts: what is statistics, the importance of statistics, descriptive and inferential statistics. (Pyrczak, 2004; Chapter 1, pp. 9-23)
2	Topic: Introduction to Statistics (continued). In this topic students will be introduced to the basic concepts of statistics: data, variables, percentages, different types of distributions, etc. (Pyrczak, 2004; Chapter 1, pp. 23-53)
3	Topic: Descriptive statistics. In this topic students will be introduced to tabular and graphical methods of data processing, qualitative and quantitative data, density distribution, statistical graphs, their meaning and importance (Pyrczak, 2004; Chapter. 2, pp. 53-99)
4	Topic: Descriptive statistics (continued). In this topic students will be introduced to localization indicators: average, median, fashion, etc. (Pyrczak, 2004; Chapter 3, pp. 99-117)
5	Topic: Descriptive statistics (continued). In this topic students will be introduced to the indicators of variation (amplitude, variance, standard deviation, etc.), (Pyrczak, 2004; chap. 3, pp. 114-134)
6	Topic: Analysis of bivariate data. In this topic students will be introduced to bivariate data and then will be introduced to the values, properties and applications of Pearson correlation (Pyrczak, 2004; chapter 4, pp. 134-149).
7	Topic: Probability. In this topic students will be introduced to the basic concepts of probability and the different types of probability
8	Semi-Final Exam
9	Topic: Analysis of variance. In this topic students will be introduced to analysis of variance, analysis of variance procedures, completely random models, random block models. (Pyrczak, 2004; chap. 15, pp. 421-426)

10	Topic: Analysis of variance (continued). In this topic students will be introduced to analysis of variance, experiments with several factors, methods of multiple comparisons. (Pyrczak, 2004; chap. 15, pp. 426-467)
11	Topic: Regression and simple linear correlation. In this topic students will be introduced to regression and simple linear correlation, the least squares method, the coefficient of determination, the regression model and assumptions about it, the control of the significance of the connection. (Pyrczak, 2004; chap. 14, pp. 378-388)
12	Topic: Regression and simple linear correlation (continued). In this topic students will be introduced to, statistical infertility, criteria F and t, evaluation and forecasting, residual analysis, control of assumptions for the linear model, residual analysis, impact observations major, correlative analysis (Pyrczak, 2004; chap. 14, pp. 388-400)
13	Topic: Regression with many variables. In this topic students will be introduced to the multiple regression model and its assumptions, finding the estimate for the multiple regression equation, checking for the importance of the connection, estimating and predicting (Pyrczak, 2004; chap. 14, p. 400- 421)
14	Topic: Testing of Mean. In this topic students will be introduced to single-mean testing, testing the differences between two means with independent groups, comparing mean pairs (Pyrczak, 2004; chap. 14, pp. 324-360)
15	Topic: Testing of Averages (continued). In this topic students will be introduced to tests the means of pairs between independent pairs, (Pyrczak, 2004; chap. 14, pp. 341-360)
16	Final Exam

Prerequisites	The student must attend the course at a minimum rate of 75%.
Literature	• “Statistika” Fakulteti i Ekonomise, UT, grup autorësh , 2012 • Pyrczak, F. (2004). Success at statistics. Glendale, CA: Pyrczak Publishing • Ushtrime të statistikës (Grup autorësh) Fakulteti i Ekonomisë, Universiteti i Tiranës (2005)
References	• W. Navidi (2006), Statistics for Engineers and Scientists, New York Statistika (Cikël leksionesh) Fakulteti i Ekonomisë, Universiteti i Tiranës (2005) • Discovering Statistics Using IBM SPSS STATISTICS 4-th E (Andy Field) 2013

Course Outcome

1	Students should acquire the skills to investigate situations and collect statistical data
2	Students must acquire the skills to process and analyze statistical data using accurate methods of their processing
3	Students must acquire the skills to present and interpret statistical data
4	Students should calculate indicators and statistical parameters and be able to interpret them in order to solve different situations.

Course Evaluation

In-term Studies	Quantity	Percentage
Midterms	1	30
Quizzes	0	0
Projects	0	0
Term Projects	0	0
Laboratory	0	0
Class Participation	1	10
Total in-term evaluation percent		**40**
Final exam percent		**60**
Total		**100**

ECTS Workload (Based on Student Workload)

Activities	Quantity	Duration (hours)	Total (hours)
Course duration (Including the exam week: 16x Total hours of the course)	16	4	64
Study hours outside the classroom (Preparation, Practice, etc.)	14	2	28
Duties	0	0	0
Midterms	1	10	10
Final Exam	1	23	23
Other	0	0	0
Total Work Load			**125**
Total Work Load / 25 (hours)			**5.00**
ECTS			**5.00**