CYPRUS INTERNATIONAL INSTITUTE OF MANAGEMENT

COURSE UNIT DESCRIPTION

Course Unit Title	**QUANTITATIVE METHODS & STATISTICAL ANALYSIS**	
Course Unit Code	MB730	
Type of Unit	Core	
Level of Course Unit	Second cycle	
Year of Study	First/second year	
Semester	On demand	
Number of ECTS	6 ECTS	
Course Unit Objectives	The objective of this course is to introduce the fundamental concepts and tools of statistics and to provide the appropriate theoretical and practical skills necessary for collecting, analyzing and interpreting data to conduct research and data analysis.	
Learning Outcomes	On completion of the course the students are expected to be able to:	
	CILO 1	Identify the different types of business problems that can be addressed through quantitative research
	CILO 2	Apply tabular, graphical, and descriptive methods in order to study and understand a variable
	CILO 3	Identify the basic concepts of probability theory and probability and sampling distribution
	CILO 4	Analyze and draw conclusions using a confidence interval and a hypothesis test.
	CILO 5	Apply statistical methods in order to study and understand the relationship between two or more variables
	CILO 6	Analyze data using Microsoft Excel
Mode of delivery	Face to Face	
Prerequisites	Basic algebra and Microsoft Excel knowledge.	
Course Content	**1. Introduction to Quantitative Research:** The 1st part of the course deals with preliminary notions of statistics, including data types, scales of measurement, types of statistics, and sampling.	CILO 1
	2. Introduction to Statistics: The 2nd part of the course deals with preliminary notions of statistics, including data types, scales of measurement, types of statistics, and sampling.	CILO 1
	3. Descriptive Statistics: The 3rd part of the course deals with the ways of organizing, presenting and describing data. Additionally, it studies the measures of location and variability, and the relationship between 2 variables using the correlation coefficient. Finally, Microsoft Excel is introduced, along with tools for the study of descriptive statistics.	CILO 2 CILO 6
	4. Introduction to Probability and Sampling Distributions: The 4th part of the course deals with the preliminary notion of probability theory (e.g., sets, experiments, sample space, events). Furthermore, it demonstrates the ways to assign probability to events. Finally, it introduces the notions of random variables, probability distribution and deals with discrete distribution (bernoulli, binomial, and poisson) and continuous distribution (normal and standard normal).	CILO 3
	5. Interval Estimation: The 5th part of the course demonstrates the way of creating a confidence interval for the population mean, the population proportion, the population mean and proportion with two populations and the population variance and standard deviation.	CILO 4
	6. Hypothesis Testing: The 6th part of the course demonstrates the way of performing a hypothesis test for the population mean, the population	CILO 4

	proportion, the population mean and proportion with two populations and the population variance and standard deviation.	
	7. **Linear Regression:** The final part of the course presents the way to estimate the population relationship between two variables through the use of the least squares method. Finally, it examines the way to estimate the relationship between two or more independent variables and a dependent variable through the use of the multiple linear regression.	CILO 5 CILO 6
Recommended or required reading	**Textbooks:** Anderson, D.R, Sweeney D.J., Williams T.A., Camm J.D., and Cochran J.J. (2018). Essentials of Modern Business Statistics with Microsoft Office Excel. Cengage Learning. Illowsky, B. and Dean, S. (2012). Collaborative Statistics. http://cnx.org/content/col10522/latest/ Groebner, D.F., Shannon, P.W., and Fry, P.C. (2017). Business Statistics: A Decision Making Approach. Pearson Education Anderson, D.R, Sweeney D.J., and Williams T.A., (2008). Statistics for Business and Economics. Pearson Education **Online Reading:** Useful online material can be found on the Khan Academy webpage (https://www.khanacademy.org): Descriptive Statistics: https://www.khanacademy.org/math/statistics-probability/analyzing-categorical-data https://www.khanacademy.org/math/statistics-probability/displaying-describing-data https://www.khanacademy.org/math/statistics-probability/summarizing-quantitative-data www.khanacademy.org/math/statistics-probability/describing-relationships-quantitative-data Introduction to Probability: https://www.khanacademy.org/math/statistics-probability/probability-library www.khanacademy.org/math/statistics-probability/counting-permutations-and-combinations Probability and Sampling Distributions: https://www.khanacademy.org/math/statistics-probability/random-variables-stats-library https://www.khanacademy.org/math/statistics-probability/sampling-distributions-library Interval Estimation: https://www.khanacademy.org/math/statistics-probability/confidence-intervals-one-sample Hypothesis Testing: https://www.khanacademy.org/math/statistics-probability/significance-tests-one-sample https://www.khanacademy.org/math/statistics-probability/significance-tests-confidence-intervals-two-samples Linear Regression: https://www.khanacademy.org/math/probability/regression/regression-correlation/v/regression-line-example https://www.khanacademy.org/math/probability/regression/regression-correlation/v/correlation-and-causality www.khanacademy.org/math/statistics-probability/advanced-regression-inference-transforming
Planned learning activities and teaching methods	Presentation of concepts and theories with exercises; in-class discussions and debates; case studies; presentations; individual and team-work; demonstration of statistical use on a computer
Assessment methods and criteria	20% - Class Participation (including in-class exercises); 30% - Individual Assignment 40% - Group Project; 10% - Presentation of the Group Project
Instruction Language	English