

Course Title	<b>QUANTITATIVE METHODS</b>				
Course Code	<b>MBA515</b>				
Course Type	Compulsory				
Level	MBA (Level 2)				
Year / Semester	1 <sup>st</sup> Year / Fall Semester				
Teacher's Name	Elena Ketteni				
ECTS	5	Lectures / week	3 hours	Laboratories / week	
Course Purpose and Objectives	<p>The purpose of the course is to introduce students in the statistics field. In this course we introduce students to some important aspect of quantitative methods used in business studies. Through this course the students will acquire knowledge on basic statistics used in applied sciences, along with methods used such as simple and multiple regression analysis and its extensions (quadratics, logarithms, and dummy variables).</p> <p>We start by defining basic probability concepts, random variables and discrete (Binomial, Poisson) and continuous distributions (Normal). Then we move to decision analysis techniques – models under different environment (certainty, uncertainty and risk). Finally, in the last part of the course we deal with topics that include the description of data, hypothesis testing, estimation of various relationships using correlation analysis, interpretation and derivation of estimation parameters of simple regression analysis and predictions.</p> <p>During the course the students become familiar with basic statistical tools used in applied business research, and through the lectures they understand their use using actual data (online databases and data from questionnaires).</p> <p>Students apply all these methods, in mathematical exercises and assignments.</p>				
Learning Outcomes	<p>By the end of the module, you should be able to:</p> <ul style="list-style-type: none"> <li>• Understand basic concepts of probabilities and probability distributions</li> <li>• Apply methodologies for decision analysis</li> </ul>				

	<ul style="list-style-type: none"> <li>• Summarize data using descriptive statistics</li> <li>• Construct confidence intervals and test hypothesis for the population mean</li> <li>• Test independence in questionnaire data using the chi-square statistic</li> <li>• Examine relationships with correlation and regression analysis</li> </ul>		
Prerequisites	none	Required	none
Course Content	<p>Chapter 1: Elements of Probability</p> <ul style="list-style-type: none"> <li>○ Elements of probability.</li> <li>○ Basic relationships for probabilities</li> <li>○ Bayes theorem</li> </ul> <p>Chapter 2: Random variables and distributions</p> <ul style="list-style-type: none"> <li>○ Discrete random variables and distributions: Binomial, Poisson</li> <li>○ Continuous random variables and distributions: Normal</li> </ul> <p>Chapter 3: Decision analysis under</p> <ul style="list-style-type: none"> <li>○ Certainty</li> <li>○ Uncertainty</li> <li>○ Risk</li> </ul> <p>Chapter 4: Description of data</p> <ul style="list-style-type: none"> <li>• Description of one variable.</li> <li>• Measures for describing data: Mean, Mode, Median, Variance, Standard deviation</li> </ul> <p>Chapter 5: Sampling distributions - Hypothesis testing</p> <ul style="list-style-type: none"> <li>• Confidence intervals for population mean</li> <li>• Hypothesis testing for population mean</li> <li>• Chi-square test: Goodness of fit, Independence</li> </ul> <p>Chapter 6: Statistical Method: Regression analysis</p> <ul style="list-style-type: none"> <li>○ The concept of significance</li> <li>○ Correlation analysis</li> <li>○ Simple Regression</li> <li>○ Extensions</li> </ul>		
Teaching Methodology	<p>The course is delivered to the students by means of lecturers, conducted with the help of computer presentations and the use of the board.</p> <p>The course also involves tutorials on how to solve certain numerical problems and exercises in each area of statistics taught in the course.</p>		

	The students are engaged in the course through questions which are discussed in class, and through examples solved on the board.
Bibliography	<ul style="list-style-type: none"> <li>• Business Statistics in Practice, Bowerman, O’Connel and Murphree, 9<sup>th</sup> edition, McGraw Hill higher education, 2018</li> <li>• Statistical Techniques in Business and Economics, 2018, 17<sup>th</sup> edition, Lind Marchal and Walthen, McGraw Hill higher education.</li> <li>• Essentials of Business Statistics, 5<sup>th</sup> edition, 2015, Bowerman, O’Connel, Murphree and Orris, McGraw Hill higher education.</li> <li>• Essential statistics for economics, business and management, 2007, Bradley, Wiley</li> </ul>
Assessment	<p>The formal assessment of this module consists of</p> <p><b>One marked assignment</b> Assignment (40% of total marks for module)</p> <p><b>One closed-book, examination</b> (60% of total marks for module)</p>
Language	English