COURSE OUTLINE

1. GENERAL

SCHOOL	Social, Political and Economic Sciences		
SECTION	Economics		
LEVEL OF STUDIES	Undergraduate – Level 6		
COURSE CODE	NK302	**SEMESTER OF STUDIES**	3nd
COURSE TITLE	Statistics I		

TEACHING ACTIVITIES	**WEEKLY HOURS PER WEEK**	**ECDS CREDITS**
	4	6
COURSE TYPE	Background	
PREREQUISITES:	Mathematics 1	
TEACHING & EXAMINATION LANGUAGE:	Greek	
COURSE OFFERED TO ERASMUS STUDENTS	Yes (assignment examined)	
COURSE URL:	https://econ.duth.gr/en/courses/statistics-i/	

2. LEARNING OUTCOMES

Learning Outcomes
• The aim of the course is to understand the basic concepts of Descriptive and Inference Statistics, Probability theory and the most important distributions of random variables. • Relationship of the course with the subject of the Department • The Department of Economics aims at the study and promotion of economics. This objective is served by all quantitative tools that allow the economic environment to be understood on the basis of the possibility of: • analyze the variables that determine the behavior and decisions of households, businesses and economic policy makers • acquire the ability to understand the methodological approaches of economics • acquire scientific and methodological knowledge in specialized fields of statistics • learn how to use empirical methodological tools of economics and business administration to analyze complex problems, the economy and businesses

- learn to search for and use scientific sources and to verify or reject scientific proposals
- are prepared using case studies for her professional career in the private or public sector

General Skills

Search, analyze, compose and present data and information, using the necessary statistical tools

Decision-making

Promoting free, creative and inductive thinking

Ability to understand complex problems related to the field of Statistics

3. COURSE CONTENT

- Descriptive Statistics
- Basic concepts of Probabilities
- Probability distributions of random variables – Random variable distribution parameters
- Discrete Probability distributions
- Continuous Probability distributions
- Probability distributions of multidimensional random variables
- Convergence of sequences of random variables
- Parameter Estimation
- Confidence Intervals
- Hypothesis Testing in one and two populations
- ANOVA Analysis
- Regression
- Non-parametric Statistics

The structure of the teaching is as follows:

First week

General Description of Statistics and necessary introductory knowledge

Second Week

Data Definition and Collection, Definition of Variables, Data Collection, Sampling Methods, Survey Errors

Third Week

Organization of Categorical – Numerical Variables, Graphical Representation of Categorical – Numerical Variables, Graphical Representation of Two Variables, Challenges in Organization and Graphical Representation of Variables.

Fourth Week

Descriptive Statistics (Central trend, variability, etc.), descriptive population measures, Combination and other issues of descriptive statistics, Traps of descriptive statistics.

Fifth Week

Basic Concepts of probability, bound probabilities, Bayes theorem, rules of enumeration.

Sixth Week

Discrete probability distributions (Poisson, Binomial).

Seventh Week

Continuous Probability Distributions (Normal, F, Student t, chi square, exponential). Properties-application – connection with economic theory and economic models

Eighth Week

Empirical sampling distributions, Connection and examples in economics.

Ninth Week

Introduction to parameter estimation, the concept of estimation, estimation of the average by the standard deviation of population, selection of sample size.

Tenth Week

Control of hypotheses of a single population with a known standard deviation, Errors of type I and II, calculation of probability of type II error.

Eleventh Week

Comparison of two populations, means, variability parameters

Twelfth Week

Analysis of Variance. Good fit control, chi square test, nominal data.

Thirteenth Week

Multiple regression, coefficient estimation, conditionality control, Non-parametric controls (Wilcoxon, Kruskal-Wallis, Friedman).

4. TEACHING AND LEARNING METHODS - EVALUATION

<table>
<tr><td>METHOD OF DELIVERY</td><td>Face to face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</td><td>Use of remote training methods in teaching and communication with students</td></tr>
<tr><td>TEACHING ORGANIZATION</td><td>
<table>
<tr><th>Activity</th><th>Semester Workload</th></tr>
<tr><td>LECTURES</td><td>52 HOURS</td></tr>
<tr><td>INDEPENDENT STUDY</td><td>98 HOURS</td></tr>
<tr><td>TOTAL COURSE</td><td>150 HOURS</td></tr>
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<tr><td>STUDENT EVALUATION</td><td>Mid-term exam (online examination on a specific date within the semester) (20%)</td></tr>
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	Assignments (online delivery on a specific date within the semester) (10%) *Final examination (70%)*

5. RECOMMENDED BIBLIOGRAPHY

Keller G. (2010) Statistics on economics and business administration, Epikentro Publications, Athens.

Zacharopoulou C. (2009) Statistics, Methods – applications (volume A), Sofia Publications, Thessaloniki.

Downing D. and Clark J. (2010) Business Statistics, Klidarithmos Publications, Athens.

Levine D., Szabat K. and Stephan D. (2018) Statistics: Basic Principles with Emphasis on Economics and Business, Broken Hill Publications, Nicosia, Cyprus.

Mario Triola (2021) Introduction to Statistics, Broken Hill Publications, Nicosia, Cyprus.