



NATIONAL UNIVERSITY OF ENGINEERING
COLLEGE OF ECONOMICS AND STATISTICAL ENGINEERING
STATISTICAL ENGINEERING PROGRAM

EC215 – COMPUTING II

I. GENERAL INFORMATION

CODE	: EC215 Computing II
SEMESTER	: 2
CREDITS	: 2
HOUR PER WEEK	: 4 (Theory – Practice - Laboratory)
PREREQUISITES	: Computing I
CONDITION	: Mandatory

II. COURSE DESCRIPTION

The course prepares the student in the handling of statistical tools such as Excel, SPSS and R. In order to have the computational skills necessary to solve statistical problems and implement statistical tools in research.

III. COURSE OUTCOMES

The student:

1. Uses advanced tools of MS. Excel.
2. Knows the analysis and treatment of information with SPSS.
3. Development of univariate and bivariate statistics with SPSS and R.
4. Development of basic statistical models with SPSS.

IV. LEARNING UNITS

DYNAMIC TABLES AND DATA ANALYSIS MODULES

Dynamic Tables Management / Introduction to Excel Data Analysis / Random Sampling with Excel / Descriptive Statistics with Excel / Correlation Analysis with Excel / Bivariate Regression Analysis with Excel.

IBM SPSS STATISTICS MANAGEMENT - DATABASE

Introduction to SPSS / Variable construction in SPSS / Conditional management SPSS / Function management in SPSS / Random sample selection with SPSS / Database aggregation with SPSS / Database merging with SPSS (Merge cases and variables) / Database restructure techniques with SPSS / Using commands via SPSS syntax.

IBM SPSS STATISTICS MANAGEMENT - DATA ANALYSIS AND MODELING

Descriptive analysis with SPSS / Contingency tables with SPSS / Comparison of means with SPSS / Tests of association with SPSS / Analysis of correlation with SPSS / Analysis of linear regression with SPSS / Introduction to Factorial Analysis with SPSS

IBM SPSS STATISTICS MANAGEMENT - GRAPHICS

Variable distribution via graphs: histograms, foot, leaves and stems / Data behavior analysis: boxplot graphs for 1 and several samples / Outlier identification: graphs q - q plot and boxplot / Variable relation: 2D and multidimensional scatter diagrams .

INTRODUCTION TO THE MANAGEMENT OF R

Simple calculations and vector management / Indexed variables: Matrices / Data reading / Probabilistic distributions.

V. LABORATORY AND PRACTICAL EXPERIENCES

All classes are held in the computing laboratory.

VI. METHODOLOGY

The course is theoretical - practical and all classes are developed in laboratories. In the theory the teacher presents the handling of commands in software computations such as Excel, SPSS and R. In practical and laboratory sessions the student will analyze case studies with real data. In all the sessions the active participation of the student is promoted.

VII. GRADING FORMULA

Evaluating system "I". Calculating the final average (PF):

$$PP = (PC1 + PC2 + PC3 + PC4 - \text{MIN}(PC1, PC2, PC3, PC4))/3$$

$$PF = (2PP + EP + EF)/4$$

EP: Mid-term Exam EF: Final Exam PC1: Qualified practice 1 PC2: Qualified practice 2
PC3: Qualified practice 3 PC4: Qualified practice 4 y PP: Average of qualified practices

VIII. BIBLIOGRAPHY

1. Manuals of SPSS.
2. Manuals of Excel.
3. Manuals of R.