UBBFSEGA
Universitatea Babeș-Bolyai | Facultatea de Științe Economice și Gestiunea Afacerilor
FSEGA CLUJ-NAPOCA
UNIVERSITATEA BABEȘ-BOLYAI
TRADIȚIE ȘI EXCELENȚĂ
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DETAILED SYLLABUS
Statistics for Economists

1. Information about the study program

1.1 University	Babeș-Bolyai University
1.2 Faculty	Faculty of Economics and Business Administration
1.3 Department	Statistics, Forecasting, Mathematics
1.4 Field of study	Accounting
1.5 Program level (bachelor or master)	Master
1.6 Study program / Qualification	Accounting and Organizations

2. Information about the subject

2.1 Subject title	EME0643 Statistics for Economists						
2.2 Course activities professor	Professor Dorina Lazar						
2.3 Seminar activities professor	Assistant Professor Anita Todea						
2.4 Year of study	I	2.5 Semester	2	2.6 Type of assessment	SE	2.7 Subject regime	CO

3. Total estimated time (teaching hours per semester)

3.1 Number of hours per week	3	out of which: 3.2 course	1	3.3 seminar/laboratory	2
3.4 Total number of hours in the curriculum	42	out of which: 3.5 course	14	3.6 seminar/laboratory	28

Time distribution	Hours
Study based on textbook, course support, references and notes	40
Additional documentation in the library, through specialized databases and field activities	20
Preparing seminars/laboratories, essays, portfolios and reports	40
Tutoring	4
Assessment (examinations)	4
Others activities	-
3.7 Total hours for individual study	108
3.8 Total hours per semester	150
3.9 Number of credits	6

4. Preconditions **(if necessary)**

4.1 Curriculum	-
4.2 Skills	-

5. Conditions (if necessary)

5.1. For course development	-
5.2. For seminar / laboratory development	Computers, statistic software

6. Acquired specific competences

Professional competences	• Ability for collection, processing and interpretation of relevant information, using quantitative methods; • Ability to use statistical methods for decision making, and to develop forecasts; • Acquiring the skills to use statistical software; • Ability to work in teams, issue recommendations to solve problems that require a quantitative approach; • Develop decision-making capacity, and ability to develop useful reports to ensure the interface between the executive and decision levels; • Develop the abilities for scientific research, and to elaborate research reports.
Transversal competences	• Ability to work in teams of members with interdisciplinary tasks, to communicate and to assume a leadership role when necessary; • Openness towards training and improving their professional performance; • Openness towards innovation, and scientific research.

7. Subject objectives (arising from the acquired specific competences)

7.1 Subject's general objective	The course provides the background into the main statistical methods used to analyze economic data; quantitative analysis facilitates the extraction of useful information for developing strategies and decisions.
7.2 Specific objectives	Learning and applying statistical techniques to analyze real data from economy; Identify appropriate methods according to the type of variables and data available; Interpretation of results from processing and incorporating them in the decision process; Acquiring the skills to use statistical software SPSS and R.

8. Contents

8.1 Course	Teaching methods	Observations
Basic probability: probability, conditional/ marginal probability and distributions, Bayes' theorem	Lecture+Discussion	1 lecture
Discrete/ Continuous probability distributions	Lecture+Discussion	1 lecture
Point estimation, mean squared error, unbaised/ efficient/ consistent estimator. Sampling distributions of sample means	Lecture+Discussion	1 lecture
Testing hypothesis, the type I/ type II error, power of the test, p-value Testing hypothesis about means/ proportions	Lecture+Discussion	1 lecture
Test of association in contingency table Analysis of variance: One-way/Two-way ANOVA	Lecture+Discussion	1 lecture
Multiple linear regression: OLS fit and tests for coefficients. Gauss-Markov theorem	Lecture+Discussion	1 lecture
Time series. Decomposition and forecasting using regression Forecasting using exponential smoothing.	Lecture+Discussion	1 lecture

References:

Beals, R.E., Statistics for economists, Rand McNally College, 1972.
Wonnacott, T.H. and Wonnacott, R.J., Introductory Statistics for Business and Economics, Wiley , 1990.
Field, A., Jeremy Miles, J. and Field, Z., Discovering Statistics Using R, Sage, 2012.
Newbold, P., Carlson, W.L. and Thorne, B.M., Statistics for Business and Economics, Pearson, 2013.

8.2 Seminar/laboratory	Teaching methods	Observations
Discrete/ Continuous variable, mean, variance, other characteristics	Problems+Discussion	1 seminar
Functions of random variables. Covariance, independence, correlation	Problems+Discussion	1 seminar
Random sampling, stratified/ cluster/ multistage sampling Monte Carlo simulations: Central limit theorem	Debate+Problems in SPSS and R	1 seminar

Distribution of sample statistics. Examples	Debate+Problems in SPSS and R	1 seminar
Testing hypothesis. Examples	Debate+Problems in SPSS and R	1 seminar
Confidence intervals. The bootstrap. Examples	Debate+Problems in SPSS and R	1 seminar
Test of association in contingency table. Correlation: coefficients, bootstrapping correlations. Examples	Debate+Problems in SPSS and R	1 seminar
Analysis of variance: One-way/Two-way ANOVA. Examples	Debate+Problems in SPSS and R	1 seminar
Multiple regression: OLS fit and tests for coefficients. Examples	Debate+Problems in SPSS and R	1 seminar
Multiple regression: dummy variables, nonlinear regression. Examples	Debate+Problems in SPSS and R	1 seminar
Multiple regression: multicoliniarity, distribution of errors	Debate+Problems in SPSS and R	1 seminar
Time series: forecasting using exponential smoothing. Examples	Debate+Problems in SPSS and R	1 seminar
Simultaneous equations: structural equations and reduced form, identification	Lecture+Discussion	1 seminar
Simultaneous equations: example involving demand and supply.	Lecture+Discussion	1 seminar

References:

Beals, R.E., Statistics for economists, Rand McNally College, 1972.
Wonnacott, T.H. and Wonnacott, R.J., Introductory Statistics for Business and Economics, Wiley, 1990.
Field, A., Jeremy Miles, J. and Field, Z., *Discovering Statistics Using R*, Sage, 2012
Field, A., Jeremy Miles, J. and Field, Z., Discovering Statistics Using R, Sage, 2012
Cleff, T., Exploratory data analysis in business and economics: An Introduction using SPSS, Stata, and Excel, Springer, 2014.

9. Corroboration / validation of the subject's content in relation to the expectations coming from representatives of the epistemic community, of the professional associations and of the representative employers in the program's field.

The course is harmonized with the subjects teached at similar study programs from the country and abroad, and incorporates curent knowledges in the field; it also takes into account a correlation of the content with labor market needs.

10. Assessment (examination)

Type of activity	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Acquiring the basic concepts and being able to apply them properly, in business and economics.	Written exam	30%
10.5 Seminar/laboratory	The student has to apply the statistical methods in order to analyze real economic data and to solve empirical studies	Written exam+Projects	35% Written exam 35% Projects
	Ability to use statistical software to conduct projects involving real data, and to use the results in the decision process.		

10.6 Minimum performance standard

- It is necessary to obtain a minimum grade of 5 (five) in order to pass this subject;
- The grades being granted are between 1 (one) and 10 (ten);
- The exam is written and takes approximately 120 minutes;
- The exam focuses on the proper application of concepts and methods.