UBBFSEGA
Universitatea Babeş-Bolyai | Facultatea de Ştiinţe Economice şi Gestiunea Afacerilor
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DETAILED SYLLABUS
Statistical computing

1. Information about the study program

1.1 University	Babeş-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	EME0627 Statistical Computing						
2.2 Course activities professor	Rodica Ioana Lung						
2.3 Seminar activities professor	Rodica Ioana Lung						
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	2	3.3 seminar/laboratory	1
3.4 Total number of hours in the curriculum	42	out of which: 3.5 course	28	3.6 seminar/laboratory	14

Time distribution	Hours
Study based on textbook, course support, references and notes	35
Additional documentation in the library, through specialized databases and field activities	30
Preparing seminars/laboratories, essays, portfolios and reports	35
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	The following software packages are required: SAS, STATA, and MATLAB. Access to Compustat, CRSP, and WorldScope.
5.2. For seminar / laboratory development	Same as 5.1.

6. Acquired specific competences

Professional competences	After completing this course, students should be able to perform basic data manipulation /visualization, and statistical analyses in SAS/STATA/MATLAB and have knowledge about accessing real databases such as Compustat, CRSP, and WorldScope.
Transversal competences	• Students should be able to perform easily also other tasks in SAS/STATA/MATLAB and be able to adapt easier to different data management environments. • The course should empower the students to approach other statistical packages with ease and confidence.

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

7.1 Subject's general objective	The aim of the course is to provide students with the basics of three software packages (SAS, STATA, MATLAB) and data access methods.
7.2 Specific objectives	In SAS/STATA/MATLAB: • import/convert data into the native format for analysis; • use visualization tools provided by each package; • perform basic statistic tasks; • access different databases

8. Contents

8.1 Course	Teaching methods	Observations
1. SAS/ data manipulation and visualization.	lecture/ examples	2 weeks
2. SAS/ Common statistical procedures.	lecture/ examples	2 weeks
3. STATA/ data manipulation and visualization.	lecture/examples	2 weeks
4. STATA/ Common statistical procedures.	lecture/examples	2 weeks
5. MATLAB / data manipulation and visualization.	lecture/examples	2 weeks
6. MATLAB/ Common statistical procedures.	lecture/examples	2 weeks
7. Real data access (Compustat, CRSP, WorldScope)	lecture/examples	2 weeks

References:

1. SAS
   1.1. Lora D. Delwiche, Susan J. Slaughter, The Little SAS Book: A Primer, Fifth Edition, SAS Institute, 2012.
   1.2. www.sas.com
2. STATA
   2.1. Hamilton, L.C., Statistics with Stata: Version 12, Eight Edition, Cengage, 2013.
3. MATLAB
   3.1. Martinez, Wendy L. 2011. "Computational Statistics in MATLAB®." Wiley Interdisciplinary Reviews: Computational Statistics 3 (1). John Wiley & Sons, Inc.: 69–74. doi:10.1002/wics.138.

8.2 Seminar/laboratory	Teaching methods	Observations
1. SAS /data manipulation/visualization/statistical procedures	exercices	4 meetings
2. STATA /data manipulation/visualization/statistical procedures	exercices	4 meetings
3. MATLAB /data manipulation/visualization/statistical procedures	exercices	4 meetings
4. Data access/real applications	exercices	2 meetings

References: same as for the course.

1. SAS
   1.1. SAS® Certification Prep Guide: Base Programming for SAS® 9, Third Edition, 2011.
   1.2. www.sas.com
2. STATA
   2.1. Baum, F. C., An Introduction to Modern Econometrics Using Stata, Stata Press, 2006.
3. MATLAB
   3.1. Martinez, Wendy L, and Angel R. Martinez. Computational Statistics Handbook with MATLAB. Boca Raton, FL: Chapman & Hall/CRC, 2008.

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.

- SAS, STATA and MATLAB are some of the most widely used software packages for statistical computing both in industry and academia. SAS and STATA are dedicated to data analysis procedures and MATLAB provides a powerful and flexible programing environment for data analysis and more.

10. Assessment (examination)

Type of activity	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Acquisition of concepts and methods presented in the course	Final exam. Students have to perform a specific task and present the results.	50%
	Ability to perform different tasks in SAS/STATA/MATLAB and to access real databases		
10.5 Seminar/laboratory	Acquisition of concepts and methods presented in the seminar	3 homework assignments evaluated during the semester.	50%
	Ability to perform different tasks in SAS/STATA/MATLAB and to access real databases		
	Ability to adapt to tasks not specifically presented in the seminar		
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); • Students must approach each element (question, problem) within the exam sheet; • The exam is practical and takes approximately 120 minutes; • All homework assignments are compulsory.			