ENGLISH – SYLLABUS (GENERAL)

SUBJECT:

MATHEMATICAL STATISTICS

Studies: Management II cycle studies Excellence in Management			**Faculty: Management**		
Subject status	**Type of studies**	**Semester/ Term**	**Teaching hours**		**ECTS Points**
			lectures	**classes**	
	Full time studies	1	22	16	**8**

Course description:

Mathematical Statistics in Business is a specialized field that applies mathematical and statistical methods to analyse and interpret business data. This subject emphasizes the application of statistical techniques to address various business-related problems, including market analysis, risk assessment, financial forecasting, and performance evaluation. The program focuses on imparting a solid understanding of fundamental statistical concepts and their practical use in the business environment. Students delve into probability theory, statistical inference, regression analysis, and other quantitative methods to understand, describe, and draw conclusions from data. They learn how to use statistical models to predict market trends, assess risks, and make data-driven decisions. The curriculum is designed to bridge the gap between mathematical theory and its application in real-world business scenarios. Moreover, the program incorporates hands-on experience with statistical software packages such as SPSS, SAS, or Python, providing students with the technical skills necessary to perform statistical analyses and visualization. This practical exposure is essential for students to gain proficiency in using statistical tools and interpreting results accurately. Mathematical Statistics in Business not only fosters quantitative analysis skills but also cultivates critical thinking, problem-solving, and the ability to communicate statistical findings effectively, making graduates valuable assets in business, finance, and data-driven industries.
The course is filled in with many case studies and practical examples of problems, so it should be interesting for all those students who are eager to deal with mathematical statistics in business issues also after the course.

COURSE LEARNING OBJECTIVES:

- Quantitative Analysis Skills: To equip students with a strong foundation in mathematical statistics, enabling them to analyse and interpret business data to make informed decisions.
- Statistical Modelling Competence: To develop students' abilities in constructing statistical models that can be applied to solve complex business problems and aid in strategic decision-making.
- Data-Driven Decision-Making: To instil an appreciation for the role of data in business decision-making, emphasizing statistical methods to derive insights and predictions crucial for effective business strategies.
- Statistical Software Proficiency: To provide hands-on experience with statistical software tools commonly used in the business world, enabling students to apply statistical techniques practically.
- Critical Thinking and Problem-Solving: To nurture critical thinking skills, encouraging students to analyse, interpret, and communicate statistical findings effectively to address business challenges.

Teaching the functions and role of mathematical statistics in business for contemporary market entities, developing skills in solving problems, as well as analysing data (from primary and secondary data).

COURSE EVALUATION:

Workshops – desk research report (written and oral), classes participation and activities, case studies

Lectures - final exam will be one-choice questions and open questions. (or TBA during classes)

The grading scale is as follows:

100% - 85%	5.0 (excellent)
84,9% - 75%	4.5 (very good)
74,9% - 70%	4.0 (good)
69,9% - 60%	3.5 (very satisfactory)
50% - 59,9%	3.0 (satisfactory)
< 50%	2.0 (failure)

Course policies and class rules:

The use of smartphones, mobile phones, all devices with internet access, are not allowed during the exams. During other in-class assignments you can use them for assignment purposes only. Students are expected to take full responsibility for their academic work and academic progress. Students are expected to attend class regularly, for consistent attendance offers the most effective opportunity open to all students to gain a developing command of the concepts and materials of the course. The study programme is strict about student attendance regulations. Students who focus on the business of the class increase their likelihood of success. They can do so by listening attentively to the instructor or to other students while participating in discussions. During class, they can participate as fully as possible and volunteer to answer questions. Students should minimise all behaviours that distract others during the class. Talking to other students apart from class discussions is inappropriate. Students who arrive late should seat themselves as quietly and as near to the door as they can. Students who must leave before the class period ends should exit quietly. The course material is designed to be completed within the semester time frame.

Finally, please feel free to come and see me to ask questions or to discuss difficult material. The course material is all cumulative. If you do not understand what happens in the first week, you will not understand what happens in the last week.

Teaching Methods:

Lectures and classes (multimedia, case study, individual and team workshops – projects of marketing research on chosen topic)

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Main topics:

1. "Probability and Statistics Fundamentals" - Covering the basics of probability, descriptive statistics, and inferential statistics applicable to business contexts.
2. "Regression Analysis in Business" - Exploring regression models and their application in business forecasting and decision-making.
3. "Data Mining and Predictive Analytics" - Discussing techniques for extracting insights from large datasets to make predictions and drive business strategies.
4. "Statistical Decision Theory in Business" - Analysing decision-making processes based on statistical reasoning and expected outcomes in business scenarios.
5. "Statistical Software Applications in Business" - Practical sessions using statistical software tools to perform data analysis, visualization, and interpretation.

Both lectures and classes cover all above.

Literature

Main texts:

1. David Ruppert, Richard D. De Veaux, and David E. Bock, "Statistics and Data Analysis for Financial Engineering", Springer, 2016
2. Paul Newbold, William L. Carlson, and Betty Thorne, "Statistics for Business and Economics", Pearson, 2017

Additional required reading material:

1. Richard I. Levin and David S. Rubin, "Statistics for Management", Pearson, 2016
2. Douglas C. Montgomery, George C. Runger, and Norma F. Hubele, "Engineering Statistics", Wiley, 2012
3. Mario F. Triola, "Elementary Statistics", Pearson, 2018

These books cover a range of statistical concepts, their application in business scenarios, and statistical analysis in different sectors, providing comprehensive resources for students studying mathematical statistics in business.

Rules of the exams on subject (Assessments)

Lectures – Written exam (test and case study)
Classes – homework, teamwork, case studies, discussions

Date of submitting the syllabus: 30.09.2023

Accepted by: Dean of International Affairs

Signature: .....

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