

WSB University				
Field of study: Management				
Course: Statistical Methods in Business				
Educational profile: General				
Education level: II -cycle studies				
Number of hours per semester	1		2	
	I	II	III	IV
Full-time studies (L/C/lab/pr/e)			14 L + 14 C	
Part-time studies (L/C/lab/pr/e)				
CLASS LANGUAGE	English			
LECTURER	PhD Jarosław Rybczyński			
FORM	Lectures and Classes			
COURSE OBJECTIVES	The general objective of the course is to introduce students to the fundamental and advanced statistical methods applicable in business contexts. Students learn how to apply analytical frameworks for solving managerial and organizational problems. They develop skills in the use of digital systems and tools for data-driven decision-making. Students foster the ability to interpret, argue, and communicate insights from data in a clear and persuasive way. The course prepare students for using Business Intelligence (BI) in practice to support organizational strategy and operations.			
Reference to learning outcomes		Description of learning outcomes		
Field-related learning outcome EFMD		Description of learning outcomes	Teaching and learning methods	Verification of learning outcomes
Knowledge				
Business Analysis and Research Methods	Students understand statistical models, probability distributions, and hypothesis testing in business contexts.They recognize the role of quantitative reasoning in managerial decision-making. Students know how to connect statistical techniques (e.g., regression, time-series analysis, clustering) with business problems.		Teaching methods: interactive lecture	Written exam, solving classes exercises , informal assesment during classes
LO5				
LO6	Students understand BI concepts, tools, and platforms (dashboards, predictive analytics, visualization). They know how BI supports strategic and operational decisions and recognize ethical and legal aspects of BI use.		Learning methods: data analysis, solving example cases	
Digital Skills and the Use of Information and Communication Technologies	Students understand the role of digital systems (ERP, CRM, databases) in business data collection and integration. They recognize how digital infrastructures shape the accessibility and reliability of business data. They are aware of cybersecurity, data privacy, and compliance issues.		Teaching methods: interactive lecture	Written exam, solving classes exercises , informal assesment during classes
LO16				
LO18	Students know principles of data storytelling, visualization, and digital communication strategies. They understand argumentation frameworks for presenting statistical evidence. Students recognize biases and fallacies in digital communication of insights.		Learning methods: data analysis, solving example cases	

Skills & Attitudes			
Business Analysis and Research Methods LO5 LO6	Students are able to apply statistical frameworks to real-world organizational issues. They critically evaluate data quality, sources, and methodological choices and develop problem-solving approaches with an evidence-based mindset. Students can use BI tools to process, visualize, and interpret business data. They are able to identify relevant KPIs and performance metrics. Students demonstrate an analytical mindset combined with critical awareness of the limits of BI.	Teaching methods: interactive lecture Learning methods: data analysis, solving example cases	Written exam, solving classes exercises , informal assesment during classes
Digital Skills and the Use of Information and Communication Technologies LO16 LO18	Students are able to integrate statistical analysis with digital systems for business decision-making. They use digital platforms to collaborate on data-driven projects and adopt a responsible and critical attitude toward digital system outputs and automation. Students are able to communicate statistical insights persuasively to both technical and non-technical audiences and use visualization tools to craft compelling data narratives. They demonstrate ethical responsibility in presenting evidence (transparency, clarity, avoidance of manipulation).	Teaching methods: interactive lecture Learning methods: data analysis, solving example cases	Written exam, solving classes exercises, informal assesment during classes
Full- time Participation in lectures = 14 Participation in classes = 14 Preparation to classes = 28 Preparation to lectures = 16 Preparation to an examination = 25 Project tasks = e-learning = Credit/examination = 3 others (indicate which) = TOTAL: 100 ECTS points: 4 Including practical classes: 14		Part-time Participation in lectures = Participation in classes = Preparation to classes = Preparation to lectures = Preparation to an examination = Project tasks = e-learning = Credit/examination = others (indicate which) = TOTAL: ECTS points: Including practical classes:	
PREREQUISITES	Basics of Statistics		
COURSE CONTENT (Division into contact hours and e-learning)	Lectures: 1. Introduction to Statistical Thinking in Business Descriptive Analytics and Probability in Business 2. Inferential Statistics and Hypothesis Testing 3. Regression and Correlation in Business Contexts 4. Multivariate Analysis and Business Intelligence Tools		

	- Time-Series and Forecasting in Digital Business Systems - Digital Argumentation, Data Storytelling, and Ethical Use of Statistics Classes: - Data Collection, Sampling, and Quality Issues (Hands-on with datasets) - Descriptive Analytics with Software Tools (Excel, R, Python, or SPSS) - Hypothesis Testing and Business Cases - Regression Models Applied to Business Problems - Business Intelligence Dashboards and KPIs - Forecasting with Time-Series Models in Digital Systems - Final Case Study: Communicating Data Insights (Group presentations, digital visualization, argumentation) E-learning: Not applicable
LITERATURE (compulsory reading)	A. Aczel, Complete Business Statistics, <i>McGraw-Hill</i> E. Frątczak, Statistics for Management and Economics, <i>Szkoła Główna Handlowa w Warszawie</i> - McClave J.T., Benson P.G., Sincich T., Statistics for business and Economics, <i>Prentice Hall</i> - Janczyk M., Pfister R., Understanding inferential statistics, <i>Springer</i>
OPTIONAL LITERATURE	R. Johnson, Elementary Statistics, <i>Duxbury Press Boston</i> - Greenwood P.E., Nikulin M.S., A guide to chi-squared testing, <i>Wiley Interscience</i> - Witkov C., Zengel K., Chi-squared data analysis and model testing for beginners, <i>Oxford</i> - Asadoorian M., Kantarelis D., Essentials of inferential statistics, <i>University Press of America</i> - Bernstein S., Bernstein R., Schaum's outline of elements of statistics II: inferential statistics, <i>McGraw Hill</i> Readings:
SCHOLARLY PUBLICATIONS BY PERSONS WHO CONDUCT CLASSES, WHICH ARE RELATED TO THE MODULE SUBJECT	
TEACHING AIDS	Multimedia presentation, case studies, solved examples
PROJECT (if implemented in the framework of a classes module)	Not applicable Project goal: Topic of the project: Project form:
FORM AND CONDITIONS OF ASSESSMENT CRITERIA FOR ASSESSING ACHIEVED LEARNING OUTCOMES.	Final tutorials written exam – exercise solving on last classes Students who pass this tutorials exam (grade 3,0 or more) do not have to take the online test exam during the examination session. Written tutorials exam passed at second term (with grade lower than 4,0) means necessity of passing online exam. Without tutorials passing no lectures grade (even if online exam positively passed). Tutorials activity (solved examples presentations) can move the grade one higher in comparison to tutorials exam. Evaluation criteria: In every example graded parts: - choosing exact statistical test and data to put into the formula - null and alternative hypothesis creating

	- value calculations - comparing to theoretical statistical distributions values - decision to or not to reject H0 - answer to the example question Grading scale of tutorials exam: 0-35% Fail 36-49% - 3,0 (E) 50-59% - 3,5 (D) 60-69% - 4,0 (C) 70-79% - 4,5 (B) 80-100% - 5,0 (A)
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* L-lecture, C- classes lab- laboratory, pro- project, e- e-learning