

Subject card

Subject name and code	Mathematical Statistics, PG_00178635						
Field of study	Finance and Accounting						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2027/2028		
Education level	Bachelor's studies	Subject group			Obligatory subject group in the field of study Optional subject group Subject group related to scientific research in the field of study		
Mode of study	full-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	4	ECTS credits			6.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Department of Statistics -> Faculty of Management -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Anna Gierusz-Matkowska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	0.0	0.0	60
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	60		4.0		86.0	150
Subject objectives	Presentation of basic methods of statistical inference, development of skills in estimating population parameters and conducting hypothesis tests, as well as interpretation of results.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[FiRL3_W05] To an advanced degree, the student knows and understands the tools and techniques for obtaining, compiling, and analyzing the data necessary to assess the financial situation of various entities in management, quality sciences, economics, and finance.	Student defines estimators, describes their properties and outlines the process of testing statistical hypothesis related to financial and investment phenomena	[SW4] test/exam - oral or written
	[FiRL3_U01] The student can analyze and interpret socio-economic processes and phenomena—from the finance and accounting perspective—using knowledge and tools from management, quality sciences, economics, and finance.	Student uses estimation and hypothesis testing to draw inferences in financial and investment problems	[SU4] test/exam - oral or written
	[FiRL3_U02] The student can identify, analyze or design adequate solutions to problems in finance and accounting.	Student selects and carries out appropriate statistical test to draw inferences about probability distributions of financial and investment phenomena	[SU4] test/exam - oral or written
	[FiRL3_U03] The student can obtain data and verify its accuracy from appropriately selected sources and use these data to analyse and evaluate economic processes and phenomena in management and quality sciences, economics and finance.	Student draws simple random samples from appropriate data sets and uses these samples to draw inferences	[SU4] test/exam - oral or written
Subject contents	<ol style="list-style-type: none"> 1. Estimation and inference: introduction and explanation. 2. Sampling and estimation. 3. Properties of an estimator. 4. Point estimation and interval estimation. 5. Hypothesis testing: the steps of hypothesis testing, the choice of the null and alternative hypotheses; one- tailed and two- tailed tests. 6. Type I and Type II errors. 7. P-value. 8. Parametric and nonparametric tests of independence. 9. Introduction to Big Data techniques. 		
Prerequisites and co-requisites	Knowledge from two subjects: <ol style="list-style-type: none"> 1. Descriptive Statistics 2. Probability concepts 		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written test 2	51.0%	50.0%
	written test 1	51.0%	50.0%
Recommended reading	Basic literature	Aczel, A., Sounderpandian J., 2009, Complete Business Statistics with Student CD, The Mcgraw-Hill/Irwin Series Matanda, E., Mawere, M., 2022, Research methods and statistics for crosscutting research: handbook for multidisciplinary research, Madrid: Langaa RPCIG	

	Supplementary literature	<p>Mendenhall W., Wackerly D.D., 2007, Mathematical Statistics with Applications, Thomson Learning (7th edition)</p> <p>Freund, J.E., Walpole, R.E., 1987, Mathematical Statistics, Prentice-Hall, (4th edition)</p> <p>DeFusco, R.A., McLeavey, D.W., Pinto, J.E., Runkle, D.E., Anson, M.J.P., 2016, Quantitative Investment Analysis, 3rd Edition, Wiley and Sons</p> <p>Black, K., 2011, Applied Business Statistics: Making Better business Decision, John Wiley and Sons</p> <p>Johnson R.A., Bhattacharyya G.K., 2011, Statistics: Principles and Methods, John Wiley and Sons</p> <p>Anderson, D.R., Sweeney, D.J., Williams, T.A., 2010, Statistics for business and economics, Cengage Learning</p> <p>Gierusz A., 2021, Application of deferred annuities in an occupational pension scheme. W: Pensions today - economic, managerial, and social issues, Chybalski Filip (red.), Marcinkiewicz Edyta (red.), Wydawnictwo Politechniki Łódzkiej, Łódź</p>
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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