

Subject card

Subject name and code	Computation Programming I, PG_00199346						
Field of study	Economics						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2026/2027		
Education level	Master'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	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			3.0		
Learning profile	academic	Assessment form			exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Jakub Kwiatkowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	30.0	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		0.0		15.0	75
Subject objectives	Acquiring knowledge and programming skills in Python, preparing to create advanced analyzes and data visualizations.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[EKONMU2_U01] can creatively interpret and explain economic and social phenomena and relations between them, using acquired knowledge of economics, finance and management sciences	Is able to process and visualize data using Python for the purpose of explaining economic and social phenomena and the relationships between them	[SU4] test/exam - oral or written [SU8] observation of student's independent or team work
	[EKONMU2_U15] can independently expand and improve acquired knowledge and skills in economics; is open to new ideas and techniques; tends to learn using any accessible method and to interact with other participants of the learning process	Is able to independently supplement and improve acquired knowledge and skills in the field of methods, algorithms and data processing tools for the purposes of analyzing and explaining economic and social phenomena	[SU4] test/exam - oral or written
	[EKONMU2_U04] can forecast and model complex economic and social processes using quantitative and qualitative methods and tools developed by economic sciences (including statistics and econometrics)	Is able to perform statistical calculations for the purposes of forecasting and modeling economic and social processes using appropriate Python libraries	[SU8] observation of student's independent or team work
	[EKONMU2_U08] can independently analyse economic and social phenomena and processes, and can perform a theoretically deepened assessment of such phenomena, using appropriately selected research method	Is able to independently analyze economic and social phenomena and processes using Python.	[SU8] observation of student's independent or team work
	[EKONMU2_U03] can analyse causes and course of economic and social processes and phenomena, formulate his/her own opinions on the subject, construct research hypotheses, and select and apply methods of their verification	Is able to select appropriate data analysis methods and algorithms for a specific problem and implement data processing algorithms in Python	[SU8] observation of student's independent or team work
	[EKONMU2_K02] is aware of the level of their knowledge in the area of solving complex problems in economic.; understands the need to extend and update this knowledge throughout his/her life	Is aware of the level of his knowledge and skills in the field of data processing using Python to solve economic problems, understands the need to deepen and update this knowledge and increase skills throughout life	[SK4] test/exam - oral or written
	[EKONMU2_K01] recognises the importance of knowledge in the field of economics in the process of identifying and solving economic problems and of consulting experts when having difficulties in solving them independently	Recognizes the importance of knowledge in the field of economics and statistics in the process of solving economic problems using Python and seeking the opinion of experts in case of difficulties in solving them on their own	[SK8] observation of student's independent or team work
	[EKONMU2_W06] has an in-depth understanding of statistical and econometric methods and tools for describing and modelling macro- and microeconomic economic structures and public institutions, as well as the processes taking place within them.	Knows and understands data processing methods and algorithms as well as the possibilities and ways of their application in the field of macro- and microeconomic description of economic structures and public institutions and the processes occurring within them. Doubts regarding the operation and applicability of particular data structures and algorithms are discussed during consultations.	[SW4] test/exam - oral or written
Subject contents	<p>Areas of application of Python languages in solving economic and social problems, with particular emphasis on data analysis and visualization. Environments for computing and data analysis in Python. Introduction to programming calculations in Python - language syntax, basic data types and structures, logical and arithmetic operators, program flow instructions, built-in and user functions. Libraries for programming calculations and data analysis and visualization.</p>		

Prerequisites and co-requisites	Basic knowledge of economics, management and statistics. Basic skills in data analysis (e.g. spreadsheets).		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	51.0%	100.0%
Recommended reading	Basic literature	Gągolewski M., Bartoszek M., Cena A., Przetwarzanie i analiza danych w języku Python, Wydawnictwo Naukowe PWN, Warszawa 2016.	
	Supplementary literature	Wdowiński P., Wstęp do programowania i analizy danych w języku R, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2020. Materiały prowadzącego zajęcia. Buchnowska D.: Systemy CRM i analityka biznesowa, W: Informatyka ekonomiczna: teoria i zastosowania / Wrycza S., Maślankowski J. (red.), PWN, Warszawa, 2019.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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