University of Gdańsk

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	dr Jakub Kwiatkowski mgr Miłosz Aubrecht-Prądzyński	

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_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 and present the results of his/her work.	[SU2] presentation/project/paper/ report
[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 and present the results of his/her work.	[SU2] presentation/project/paper/ report [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 and present the results of his/her work.	[SU2] presentation/project/paper/ report [SU8] observation of student's independent or team work
[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	[SK2] presentation/project/paper/ report [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.	[SW1] oral statement/ conversation/discussion
[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 and present the results of his/her work.	[SU2] presentation/project/paper/ report [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 and present the results of his/her work.	[SU2] presentation/project/paper/ report [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	[SK8] observation of student's independent or team work

Subject contents

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. Presenting the results of your calculations and visualizations in the form of a project presentation

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Basic knowledge of economics, management and statistics. Basic skills in data analysis (e.g. spreadsheets).</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>project presentation</td><td>51.0%</td><td>50.0%</td></tr><tr><td>project</td><td>51.0%</td><td>50.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Gągolewski M., Bartoszuk M.,Cena A., Przetwarzanie i analiza danych w języku Python, Wydawnictwo Naukowe PWN, Warszawa 2016.</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">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.</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3"></td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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