

Subject card

Subject name and code	MATLAB/Octave Laboratory, PG_00188603						
Field of study	Laboratorium MATLAB/Octave						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2028/2029		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		1.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Jordan Badur				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	0.0	0.0	15
	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	15		1.0		9.0	25
Subject objectives	The course is intended to introduce students to MATLAB (or Octave) programming while highlighting the connection between algebra and oceanography. Students are expected to develop the ability to write short to medium programs and supplement analytical methods with short numerical and symbolic calculations as well as visualisations.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	OCEANL3-W05		Student has the knowledge of selected oceanographical problems solved with demonstrated computational techniques.		[SW4] test/egzamin - ustny lub pisemny		
	[OCEANL3-K01] is willing to plan and implement, individually or as a team, the subsequent stages of the entrusted task, is willing to take responsibility for the results of these works, effectively cooperates in the team and performs various roles in it		Student teams solve a problem requiring writing a short code and choosing the right computational technique		[SK5] realizacja zadania problemowego		
	OCEANL3-U05		Student is able to write a short code solving a problem using numerical or symbolic calculations.		[SU5] realizacja zadania problemowego		
Subject contents	1. Workspaces, variables and their scopes. 2. Vector algebra, logical indexing. Time series visualisation with simple 1D graphics 3. Functions and scripts, flow control. Run-time debugging. 4. Matrix algebra, Transpose and inverse matrices. Matrix determinant and linear equations. Eigenvalue problem in oceanography and biology. 5. Structures and cell_array, 2D graphics and interpolation. 6. Symbolic variables and calculus. Symbolic and numerical differentiation. Numerical integration.						
Prerequisites and co-requisites	A first-year course in Mathematics covering basics of linear algebra and single-variable calculus						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	final exam	50.0%	70.0%
	problems	50.0%	30.0%
Recommended reading	Basic literature	1. Thompson R., Emery W.J., Data analysis methods in physical oceanography, Elsevier, London, 2024. 2. Harder, D.W., A practical introduction to linear algebra for undergraduate engineering using MATLAB. Univ. of Waterloo Publishing, Waterloo, 2019 3. Sradomski W., MATLAB. Praktyczny poradnik modelowania, Helion, Wrocław, 2019. 4. Berwick, D., Computational Physics using MATLAB. Dublin University, Dublin 2012	
	Supplementary literature	Jankowski R., Lubowiecka I., Witkowski W. Podstawy programowania w języku MATLAB, Wydawnictwo PG, Gdańsk, 2002	
	eResources addresses	Basic https://uk.mathworks.com/help/matlab/index.html - MATLAB documentation	
Example issues/ example questions/ tasks being completed	Fill missing data in a time series using a relevant interpolation method.		
Work placement	Not applicable		

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