

Subject card

Subject name and code	Approximation and Interpolation, PG_00179448						
Field of study	Mathematical Modeling and Data Analysis						
Date of commencement of studies	October 2023		Academic year of realisation of subject			2025/2026	
Education level	Bachelor's studies		Subject group				
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			6.0	
Learning profile	academic		Assessment form			credit	
Conducting unit	Institute of Mathematics -> Faculty of Mathematics, Physics and Informatics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Marek Halenda				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	0.0	30.0	30
	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	30		0.0		0.0	30
Subject objectives	The aim is to prepare students to report on selected topics and write a term paper.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[MMiADL3_K01] is ready to accept the limitations of his/her own knowledge and understands the need for further education	The student is able to identify gaps in his/her knowledge and actively seeks additional sources of information.	[SK8] observation of student's independent or team work
	[MMiADL3_K02] is ready to precisely formulate questions to deepen his/her own understanding of a given topic or to find missing elements of reasoning	The student is able to indicate elements of reasoning that require clarification or supplementation.	[SK8] observation of student's independent or team work
	[MMiADL3_K04] is ready to understand and appreciate the importance of intellectual honesty in own and other people's actions; is ready to act ethically	The student demonstrates intellectual honesty through thorough preparation of the report and paper.	[SK8] observation of student's independent or team work
	[MMiADL3_W12] has a basic knowledge and understanding of legal and ethical conditions related to scientific and didactic activities	The student independently performs assigned tasks, honestly presents the results of his/her work, and avoids plagiarism.	[SW2] presentation/project/paper/report [SW3] text preparation/written work
	[MMiADL3_W13] knows and understands the basic concepts and principles of industrial property protection and copyright, is able to use patent information resources	The student is able to correctly cite sources and uses them with respect for copyright.	[SW2] presentation/project/paper/report [SW3] text preparation/written work
	[MMiADL3_U14] has the ability to prepare oral presentations in Polish and at least one foreign language about selected mathematical issues using various sources of knowledge	The student is able to prepare a presentation on a selected topic based on multilingual literature.	[SU2] presentation/project/paper/report
	[MMiADL3_U15] can speak about mathematical problems in understandable colloquial language	The student is able to translate mathematical concepts and methods into language understandable to a variety of audiences and clearly communicate mathematical concepts in discussions with other seminar participants.	[SU1] oral statement/conversation/discussion
	[MMiADL3_K10] is ready to analyse data and communicate the conclusions of such analysis in an accessible form	The student is able to analyze the subject literature, synthesize information from various sources and communicate the results of his or her analysis.	[SK2] presentation/project/paper/report [SK3] text preparation/written work
	[MMiADL3_K09] is ready to critically evaluate arguments, find gaps in reasoning, and constructively criticise other people's reasoning	The student is able to critically evaluate the arguments presented in other people's reports.	[SK1] oral statement/conversation/discussion
	[MMiADL3_K06] is ready to formulate opinions on basic mathematical issues	The student is able to formulate independent conclusions based on the studied scientific literature.	[SK2] presentation/project/paper/report [SK3] text preparation/written work
Subject contents	The seminar will be devoted to two related issues: approximation and interpolation. In both cases, the goal is to create a certain approximation of a function based on available data. It is often a compromise between simplicity of description and accuracy. Depending on the adopted criteria (such as the class of functions used or the method of assessing the quality of the approximation), different computational methods are obtained. They can be used for various purposes, including numerical calculations, statistics, modeling the shape of objects, computer graphics, data compression. During the seminar, we will familiarize ourselves with both the theory and examples of applications of the discussed techniques. This will also be complemented by the implementation of these methods using selected computational tools .The source literature is in both Polish and English, so we will familiarize ourselves with the terminology in English.		
Prerequisites and co-requisites	Knowledge of basic calculus and linear algebra. Knowledge of at least one programming environment for scientific computing.		

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Term paper	51.0%	60.0%
	Oral report	51.0%	40.0%
Recommended reading	Basic literature	n/a	
	Supplementary literature	n/a	
	eResources addresses		
Example issues/ example questions/ tasks being completed	n/a		
Work placement	Not applicable		

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