

Subject card

Subject name and code	History of Mathematics, PG_00174489						
Field of study	Mathematics						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2025/2026		
Education level	Master's studies		Subject group		Optional subject group		
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		exam		
Conducting unit	Institute of Mathematics -> Faculty of Mathematics, Physics and Informatics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Agnieszka Demby				
	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		10.0		80.0	150
Subject objectives	- Familiarization of the student with the outline of the development of mathematics from ancient times to the present, as well as a more detailed analysis of the formation of selected mathematical concepts and methods, and the process of proving selected theorems.-						
	- Familiarization with the basic sources of information on the history of mathematics; learning to use various sources when preparing presentations.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[MATMU2_K01] is willing to acknowledge the limitations of his or her own knowledge and is willing to pursue further education	Is willing to acknowledge the limitations of his/her own knowledge and is willing to pursue further education in the subject's objectives and content	[SK8] observation of student's independent or team work
	[MATMU2_W02] knows and understands well the role and importance of the construction of mathematical reasoning	Is able to analyze knowledge of the history of mathematics (from lectures and literature) in order to distinguish important steps in the development of basic mathematical concepts and methods, e.g. number, infinity, solving algebraic equations	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report
	[MATMU2_K05] is ready to independently search for information in literature, also in foreign languages	Is able to independently search for literature and websites devoted to an issue of interest to him/her from the history of mathematics (also in foreign languages)	[SK2] presentation/project/paper/report [SK3] text preparation/written work
	[MATMU2_U04] is able, at an advanced level and including modern mathematics, to apply and present, orally and in writing, methods of at least one selected branch of mathematics	Is able to present, orally and in writing, the historical development of methods of at least one selected branch of mathematics.	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written
	[MATMU2_W01] knows and understands in-depth the theory of selected areas of mathematics	Knows the chronology of the main events in the history of mathematics from the earliest times to the present day – in the context of the general history of the development of civilization, • knows the achievements of the most famous mathematicians in individual historical periods, methods of reasoning and problems characteristic of the period, • knows the chronology and characteristics of the basic stages of development of classical fields of mathematics	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report
	[MATMU2_W03] knows and understands in-depth a selected field of theoretical or applied mathematics and is able to understand the formulations of issues in this field that are still at the research stage and knows the connections of issues in this field with other areas of mathematics	Knows and understands in depth the historical development of a selected field of theoretical or applied mathematics and is able to understand the formulations of issues in this field that are still at the research stage and knows the connections between issues in this field and other areas of mathematics	[SW4] test/exam - oral or written
	[MATMU2_U01] can construct mathematical reasoning: prove theorems and refute hypotheses through construction and selection of counterexamples	Is able to analyze selected reasoning from the history of mathematics	[SU1] oral statement/conversation/discussion
	[MATMU2_U06] is able to apply methods and examples from a selected field of mathematics in related fields	Is able to develop and present in the form of a presentation and essay selected issues from the history of mathematics - in such a way as to, among other things, show his/her competence in conducting classes popularizing mathematics and its history.	[SU2] presentation/project/paper/report [SU3] text preparation/written work
	[MATMU2_K06] is ready to formulate opinions on basic mathematical issues	Is ready to formulate opinions on basic mathematical issues within the scope of the subject objectives and content.	[SK8] observation of student's independent or team work
	[MATMU2_U05] can perform proofs in a selected field and, if necessary, also use tools from other areas of mathematics	Is able to indicate proofs in a chosen field in which tools from other areas of mathematics were also used in the history of mathematics	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written

	Course outcome	Subject outcome	Method of verification
	[MATMU2_K04] is ready to understand and appreciate the importance of intellectual honesty in one's own and other people's actions; ethical conduct	Is ready to understand and appreciate the importance of intellectual honesty in one's own and other people's actions; ethical conduct, also in the context of the history of mathematics	[SK1] oral statement/conversation/discussion [SK8] observation of student's independent or team work
	[MATMU2_U03] can understand mathematical texts of various types from selected fields of mathematics	Is able to understand mathematical texts of various nature from selected areas of mathematics, critically evaluate information contained in various sources, especially in popular science books and on websites.	[SU2] presentation/project/paper/report
	[MATMU2_K02] is ready to precisely formulate questions to deepen his/her understanding of a given topic or find missing elements of reasoning	Is ready to formulate precise questions that serve to deepen one's understanding of a given topic or to find missing elements of reasoning in terms of the objectives and scope of the subject	[SK8] observation of student's independent or team work
	[MATMU2_U07] is able to define his/her interests and develop them; in particular, is able to establish contact with specialists in his/her field, e.g. understand their lectures intended for young mathematicians	Is able to develop and present in the form of a presentation and essay an interesting topic from the history of mathematics - in such a way as to demonstrate his/her competence in conducting classes popularizing mathematics and its history.	[SU2] presentation/project/paper/report [SU3] text preparation/written work
Subject contents	1. The first traces of the use of the concepts of number and form (Paleolithic). The empirical nature of the mathematics of ancient Egypt and Babylon. 2. The mathematics of ancient Greece during the Hellenistic period Thales and the methodological canon of Dorian knowledge, Pythagoreans. 3. The mathematics of ancient Greece during the Hellenistic period - Euclid, Archimedes, and others. 4. Eastern mathematics: China, India, Arabs, and others. European mathematics in the Middle Ages and Renaissance; a breakthrough in the 17th century. 5. The development of the following fields of mathematics from the 17th to the early 20th century: mathematical analysis, probability theory, algebra, geometry (development of non-Euclidean geometry), set theory. 6. Hilbert's problems and their impact on the development of mathematics in the 20th century. Examples of achievements in 20th-century mathematics. 7. The Polish Mathematical School. 8. Examples of problems occupying mathematicians at the turn of the 20th and 21st centuries. Achievements and awards. Problems awaiting solutions.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Activity	51.0%	20.0%
	Observation of student's attitude	51.0%	0.0%
	Exam	51.0%	40.0%
	Presentations, project	51.0%	40.0%

Recommended reading	Basic literature	1. Boyer, C. B., Merzbach, U. C.: A history of Mathematics, John Wiley and Sons, New York Chichester Brisbane Toronto Singapore, 1989. 2. Juskiewicz, A.P. (red.): Historia matematyki, PWN, Warszawa, 1975 (t.I), 1976 (t.II), 1977 (t.III). 3. Kordos, M.: Wykłady z historii matematyki, SCRIPT, Warszawa, 2005. 4. Wiśniewski, W.: Matematyka i jej historia, Wydawnictwo NOWIK, Opole, 1997. 5. Online resources on the history of mathematics, including: Mac Tutor of Mathematics, University of St Andrew, Scotland; R.Duda - Matematyka a dzieje myśli, Uniwersytet Jagielloński Bez Granic.
	Supplementary literature	1. Bondecka-Krzykowska, I.: Przewodnik po historii matematyki, Wydawnictwo Naukowe UAM, Poznań, 2006. 2. Eves, H.: An Introduction to the History of Mathematics, The Saunders Series, Cengage Learning, 1990. 3. Ifrah, G.: Dzieje liczby, czyli historia wielkiego wynalazku, Zakład Naukowy im. Ossolińskich, Wrocław Warszawa Kraków Gdańsk Łódź, 1990. 4. Stewart, I.: Oswajanie nieskończoności. Historia matematyki, Prószyński i S-ka, Warszawa, 2010. 5. Articles from journals, e.g. np. "Wiadomości Matematyczne", "Matematyka. Czasopismo dla nauczycieli".
	eResources addresses	
Example issues/ example questions/ tasks being completed	Present the main achievements of 18th century mathematicians in the field of mathematical analysis.	
Work placement	Not applicable	

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