



Subject card

Subject name and code	History of Chemistry, PG_00062141						
Field of study	Technical Physics						
Date of commencement of studies	February 2023		Academic year of realisation of subject		2023/2024		
Education level	second-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		e-learning		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Physical Chemistry -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jarosław Wawer				
	Teachers		dr hab. inż. Jarosław Wawer				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 30.0						
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		2.0		18.0	50
Subject objectives	The acquisition of knowledge by the student in the field of the history of chemistry, historical trends, and factors influencing its development, as well as the mistakes made in this regard and the non-technical aspects of the field's evolution. Identification of the variability of the social role of chemistry in history.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K71] is able to explain the need to apply knowledge from humanistic, social, economic or legal sciences in order to function in a social environment		The student is aware of the importance of deliberate actions carried out not only in a planned but also in a creative manner. The student recognizes the significance of knowledge stored in science museums for the further advancement of science.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_U71] is able to apply knowledge from humanistic, social, economic or legal sciences in order to solve problems		The student is aware of the importance of non-technical aspects and consequences of engineering activities, including their impact on the environment and the associated responsibility for the decisions made. They are familiar with historical examples related to ethical issues in the development of chemistry, allowing for the assessment of their own actions.		[SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_W71] has general knowledge in humanistic, social, economic or legal sciences, including their fundamentals and applications		The student possesses knowledge in the field of the history of chemistry, particularly the development of its theories and methodology, as well as issues related to the scientist's and/or engineer's responsibility for the results and consequences, including social and ethical aspects, of their work.		[SW1] Assessment of factual knowledge		

Subject contents	It is difficult to imagine the modern world without modern chemistry. However, let us remember that the journey from the earliest attempts to manipulate matter (such as extracting metals from ores) to the achievements known to each of us in our daily lives (plastics, organic LED lights, synthetic drugs, etc.) has been long and required overcoming countless challenges. Humanity not only had to learn ways to produce a specific substance but also had to understand the reasons behind the changes that occurred to increase the effectiveness of their efforts. Success was achieved through the synergistic interaction between applied chemistry and increasingly accurate hypotheses about the nature of phenomena. The lectures present the evolutionary path that chemistry has undergone. It was an exceptionally interesting process, rich in sudden shifts in viewpoints, the formulation of daring theories, the repetition of errors, but also spectacular discoveries and colorful experiments. The lectures cover the pre-alchemical period, alchemy, and the transition from alchemy to modern chemistry. They show how the thoughts of Greek philosophers misled experimenters and theorists for centuries. The interesting development of views and practical discoveries from the Middle Ages to the Renaissance is discussed. The lectures clearly highlight the turning point in thinking about chemistry, thanks to the discoveries of Robert Boyle and Lavoisier. Lectures present the development of research on the composition and structure of matter, the nature of chemical bonding, the concept of an element, the classification of elements, and the causes of changes. Part of the lectures is dedicated to the contribution of Poles to the development of chemistry. The foundations leading to the emergence of modern chemistry, including the development of quantum mechanics and organic synthesis was briefly outlined. Each lecture concludes with a reflection on the lessons we can draw from the presented history of the development of chemistry, in the context of the challenges we face at present and those we will encounter in the future.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Classroom participation assessment	50.0%	10.0%
	Final written test OR presentation of a selected topic	50.0%	90.0%
Recommended reading	Basic literature	1) H. Lichocka "Historia chemii" 2011 (pozycja dostępna za darmo) 2) J. Hudson "The History of Chemistry" 1992 Chapman & Hall (Springer) 3) W. H. Brock "Historia chemii" Prószyński 1999	
	Supplementary literature	1) "The Mystery of Matter" (YouTube) https://www.youtube.com/watch?v=GWQZE0HPoAY 2) H. Lichocka "Historia chemii" 2011 https://depot.ceon.pl/bitstream/handle/123456789/12455/historia%20chemii.pdf?sequence=3&isAllowed=y	
	eResources addresses	Adresy na platformie eNauczanie: Historia chemii - Moodle ID: 32375 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32375	
Example issues/ example questions/ tasks being completed	Sample essay topics 1) Description of the history of a chosen product (e.g., glass, matches, metal alloys, nitric acid). 2) Description of the life and work of a selected discoverer. 3) Description of the history of one idea (philosopher's stone, periodic table of elements). 4) Description of a spectacular failure (Thalidomide, cold fusion). 5) Description of the history of symbolism in alchemy. 6) Description of the history of understanding the chemical composition of stars.		
Work placement	Not applicable		