



## Subject card

Subject name and code	Chemistry, PG_00041989						
Field of study	Power Engineering, Power Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2021/2022		
Education level	first-cycle 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	1	Language of instruction			English		
Semester of study	1	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Chemistry and Technology of Functional Materials -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Ewa Wagner-Wysiecka				
	Teachers		dr hab. inż. Ewa Wagner-Wysiecka dr inż. Konrad Trzciński				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
	E-learning hours included: 0.0						
Chemistry_Energy Technologies_2021/2022 - Moodle ID: 20597 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=20597">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=20597</a>							
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	45		7.0		23.0	75
Subject objectives	The aim of the subject is to learn students the concepts of chemistry and the chemical basis of the processes useful in learning problems of widely understood energetics.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W03] knows the basics of automation and automatic regulation, knows the principles of the selection of electrical devices, drive systems and their control						
	[K6_U10] can use correctly selected methods and measuring devices for determination of basic parameters during the water treatment process and wastewater treatment control; can perform basic laboratory tests leading to the assessment of water quality, pollutant load in wastewater						
[K6_K01] is aware of the need for training and self-improvement in the profession of energy and the possibility of further education; can think and act in a creative and entrepreneurial manner; can define priorities for the implementation of an individual or group task		Student realizes that the use of knowledge related to chemical transformations is important in improving professional qualifications.		[SK3] Assessment of ability to organize work [SK2] Assessment of progress of work			
Subject contents	Lecture: The structure of matter. Periodic table, chemical elements. Chemical bonds. Types of the chemical compounds. Chemical reactions. Elements of the thermodynamics and chemical kinetics. Gases, liquids and solids - properties, structure. Solutions. Corrosion. Combustion processes. Laboratory: Reaction kinetics. Qualitative analysis of cation and anions. Water hardness. Conductivity of solutions and electrolysis. Corrosion. Electrochemical series and galvanic cells.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Six tests referring to the laboratory exercises	50.0%	50.0%
	Written test on the ground of the lecture	50.0%	50.0%
Recommended reading	Basic literature	1. Bielański A.: "Chemia ogólna i nieorganiczna", PWN 2002 2. Cotton F.A., Wilkinson G., Gaus P.L.: "Chemia nieorganiczna. Podstawy.", PWN 2002 3. Sienko M.J., Plane R.A.: "Chemia. Podstawy i zastosowania", WNT 2002 4. Pajdowski L.: "Chemia ogólna", PWN 1999 5. McMurray J.: "Chemia organiczna" PWN 2005 6. Atkins P.W.: "Podstawy chemii fizycznej" PWN 1999 7. Bortel E., Koneczny H.: "Zarys technologii chemicznej", PWN 1992 8. red. Luboch E., Bocheńska M., Biernat J.F. "Chemia ogólna. Ćwiczenia laboratoryjne" Wyd. PG 2003 9. Brown T. E., Eugene LeMay H., Bursten B. E., Murphy C., Woodward P.: Chemistry: The Central Science, 12 <sup>th</sup> Ed. 2011, 10. Pauling L.: General Chemistry, 3 <sup>rd</sup> Ed. 11. S. S. Zumdahl, S. A. Zumdahl: Chemistry 7 <sup>th</sup> Ed.003	
	Supplementary literature	1. Kołos W., Sadlej J.: "Atom i cząsteczka", WNT 2007 2. Atkins P.W.: "Przewodnik po chemii fizycznej", PWN 1997 3. Mastalerz P.: "Chemia organiczna", Wyd. Chemiczne 2002 4. Bogoczek R., Kociółek-Balawejder E.: "Technologia chemiczna organiczna. Surowce i półprodukty." Wyd. AE Wrocław 1992 5. 12. Jess A., Wasserscheid P.: Chemical Technology: An Integral Textbook, 2013	
	eResources addresses		
Example issues/ example questions/ tasks being completed	-		
Work placement	Not applicable		