



Subject card

Subject name and code	Identification of materials, PG_00048407						
Field of study	Chemistry						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2023/2024		
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	3	Language of instruction			Polish		
Semester of study	6	ECTS credits			2.0		
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 inż. Radosław Pomećko					
	Teachers	dr inż. Radosław Pomećko mgr inż. Mariusz Wtulich dr inż. Konrad Trzciński					
Lesson types and methods of instruction	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	5.0		30.0		50
Subject objectives	The aim of the course is to link the relationship between the structure of materials and their physical and chemical properties, and to familiarize with experimental methods that enable the measurement of these features.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U06] can analyze the functioning of equipment, apparatus and technology lines used in laboratories and chemical industry, and can recognize and propose methods to solve the simple engineering tasks which he can meet as an Engineer and select and use routine methods, chemical apparatus and tools to solve practical engineering tasks, including also technological processes; can himself/herself read and make technical drawings using CAD software	The student knows how to determine the physical and physicochemical characteristics of the material, important for its function. The student knows and can propose methods to measure these properties			[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		

Subject contents	<p>Program laboratoriów obejmuje trzy pięciogodzinne bloki zajęć obejmujące:</p> <p>1) Blok pierwszy:</p> <p>a) Przedstawienie założeń przedmiotu. Wprowadzenie teoretyczne do zajęć. Zasady BHP</p> <p>b) Realizacja ćwiczenia: Synteza i charakterystyka polimerów przewodzących (obejmujące: syntezę polianiliny oraz badania jej elektrchromizmu, oraz właściwości pojemnościowych, syntezę i charakterystykę elektrolitów żelowych)</p> <p>2) Blok drugi:</p> <p>Realizacja ćwiczenia: Synteza, identyfikacja polimerów (obejmujące: syntezę metakrylanów oraz żywic formaldehydowych oraz badania IR otrzymanych substancji uzupełnione o badania gęstości, palności, zawartości azotu)</p> <p>3) Blok trzeci:</p> <p>a) Realizacja ćwiczenia: Synteza, identyfikacja układów hydrożelowych (obejmujące: syntezę hydrożeli opartych na PVA lub żel krzemionkowy, charakteryzacja metodami IR, badanie chłonności otrzymanych materiałów. Badania pamięci kształtów hydrożeli PVA)</p> <p>b) Pisemne zaliczenie kursu</p>											
Prerequisites and co-requisites	Basics of organic chemistry, electrochemistry and physical chemistry											
Assessment methods and criteria	<table border="1" data-bbox="448 1005 1487 1106"> <thead> <tr> <th data-bbox="448 1005 794 1039">Subject passing criteria</th> <th data-bbox="794 1005 1141 1039">Passing threshold</th> <th data-bbox="1141 1005 1487 1039">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 1039 794 1072"></td> <td data-bbox="794 1039 1141 1072">70.0%</td> <td data-bbox="1141 1039 1487 1072">50.0%</td> </tr> <tr> <td data-bbox="448 1072 794 1106"></td> <td data-bbox="794 1072 1141 1106">60.0%</td> <td data-bbox="1141 1072 1487 1106">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade		70.0%	50.0%		60.0%	50.0%
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Recommended reading	Basic literature	<p>Handbook of Materials Characterization, S.K. Sharma, Springer 2018</p> <p>Chemia polimerów, Jan Pielichowski, Andrzej Puszyński, Fosze, Rzeszów 2015</p> <p>"Polymer electrolytes", F.M. Gray, VCH 1998</p>										
	Supplementary literature	<p>Handbook of Spectroscopy: Second, Enlarged Edition, G. Gauglitz, D.S. Moore, WileyVCH 2014</p> <p>Springer Handbook of Materials Measurement Methods, H. Czichos, T. Saito, L. Smith, Springer, Berlin, Heidelberg, 2006</p>										
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>Identyfikacja Materiałów '24 - Moodle ID: 38117</p> <p>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38117</p>										
Example issues/ example questions/ tasks being completed	<p>- the impact of copolymer structure on its physicochemical properties</p> <p>- structure of organic and inorganic hydrogels</p> <p>- structure of polymers and their electro-conductive properties</p>											
Work placement	Not applicable											