



Subject card

Subject name and code	Laboratory of the Physical Chemistry, PG_00054706						
Field of study	Biotechnology						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
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		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Physical Chemistry -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jarosław Wawer				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	0.0	0.0	45
	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	45		3.0		27.0	75
Subject objectives	Students after the course should: - understand the basics of the following techniques: potentiometry, spectrophotometry, conductometry, the measurement of surface tension, refractive index, density, boiling point, viscosity - be able to apply this techniques in order to solve a specific problems - be able to make all necessary calculations and draw the conclusions						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U09		is able to operate a spectrophotometer and apply other analytical methods in laboratory practice.		[SU4] Assessment of ability to use methods and tools		
	K6_U02		is able to predict the progress of the process and the properties of the biomolecules using the knowledge from the chemistry (including physical chemistry)		[SU2] Assessment of ability to analyse information		
	K6_W09		has the knowledge about analytical methods (including spectroscopy) used in biotechnology.		[SW1] Assessment of factual knowledge		
	K6_U01		is able to recalculate the experimental data to determine the requested quantity. Student is able to analyse the data using the basic knowledge from the physics.		[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information		

Subject contents	Course content – laboratory Students are required to pass six tests and complete six experiments. 1. Spectrophotometry; determination of the composition of complexes 2. Viscometry; molecular weight of polymers 3. The physicochemical properties of liquids 4. Potentiometry; kinetics of iodination of aniline 5. Liquidvapor phase diagram in a binary system 6. Conductometry; conductometric titration		
Prerequisites and co-requisites	The student should be familiar with basic tools in Mathematics and Physics at the level required form second-year student of Technical University. The student should be familiar with Chemistry at the level required form second-year student of Chemical Faculty.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Report	95.0%	0.0%
	Test	60.0%	100.0%
Recommended reading	Basic literature	H. Strzelecki, W. Grzybkowski "Physical Chemistry - laboratory classes" Wydawnictwo PG, Gdańsk, 2004 P. W. Atkins "Physical Chemistry" PWN, Warszawa, 2003	
	Supplementary literature	Detailed bibliography can be found in H. Strzelecki, W. Grzybkowski "Chemia fizyczna - Ćwiczenia laboratoryjne" Wydawnictwo PG, Gdańsk, 2004	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Effect of a solute on the UV-VIS spectrum. Determination of liquid viscosity using an Ubbelohde viscometer. Physicochemical properties of liquids measurement methods and physical laws used for their determination. Nernst equation in potentiometric measurements, Stockholm Convention. Phase diagrams for binary systems interpretation of diagram. Conductivity, specific conductivity, molar conductivity of electrolyte solutions, and their variation with concentration.		
Practical activites within the subject	Not applicable		

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