


KAPITAŁ LUDZKI
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
 Unię Europejską w ramach
 Europejskiego Funduszu
 Społecznego

UNIA EUROPEJSKA
 EUROPEJSKI
 FUNDUSZ SPOŁECZNY


Course title		ECTS code	
Introduction to chemical kinetics		13.3.1207	
Name of unit administrating study			
null			
Studies			
faculty	field of study	type	pierwszego stopnia
Wydział Chemii	Biznes chemiczny	form	stacjonarne
		specjalty	wszystkie
		specialization	wszystkie
Wydział Chemii	Chemia	type	pierwszego stopnia
		form	stacjonarne
		specjalty	chemia biomedyczna, chemia kosmetyków, analityka i diagnostyka chemiczna, chemia żywności
Wydział Chemii	Ochrona środowiska	specialization	wszystkie
		type	pierwszego stopnia
		form	stacjonarne
		specjalty	wszystkie
		specialization	wszystkie
Teaching staff			
dr hab. Dagmara Jacewicz, profesor uczelni; dr Joanna Drzeżdżon			
Forms of classes, the realization and number of hours		ECTS credits	
Forms of classes		2 classes - 15 h tutorial classes - 15 h student's own work - 20 h TOTAL: 50 h - 2 ECTS	
Auditorium classes, Laboratory classes, Lecture			
The realization of activities			
classroom instruction			
Number of hours			
Auditorium classes: 4 hours, Lecture: 4 hours, Laboratory classes: 7 hours			
The academic cycle			
2025/2026 summer semester			
Type of course		Language of instruction	
an elective course		English	
Teaching methods		Form and method of assessment and basic criteria for evaluation or examination requirements	
<ul style="list-style-type: none"> - During the auditorium classes students will learn about the different aspects of chemical kinetics and solve different exercises faced by the teacher (on the board and individually in the notebooks). - Lecture with the use of the multimedia presentation on the basic issues of chemical kinetics - Practical laboratory work - chemical experiments, analysis of obtained results and discussion. 		Final evaluation	
		Graded credit	
		Assessment methods	
		short test and report from laboratory work	
		The basic criteria for evaluation	

	<p>Lecture, Auditorium classes, Laboratory classes: positive note from an short test with 3-6 open questions:</p> <table border="0"> <tr><td>91-100%</td><td>5.0</td></tr> <tr><td>81-90%</td><td>4.5</td></tr> <tr><td>71-80%</td><td>4.0</td></tr> <tr><td>61-70%</td><td>3.5</td></tr> <tr><td>51-60%</td><td>3.0</td></tr> <tr><td>< 51%</td><td>2.0</td></tr> </table> <p>a. passing short test covering the material of the Lecture, Auditorium classes, Laboratory classes</p> <p>b. assessment criteria in accordance with the University of Gdańsk Study Regulations</p>	91-100%	5.0	81-90%	4.5	71-80%	4.0	61-70%	3.5	51-60%	3.0	< 51%	2.0
91-100%	5.0												
81-90%	4.5												
71-80%	4.0												
61-70%	3.5												
51-60%	3.0												
< 51%	2.0												
Method of verifying required learning outcomes													
Required courses and introductory requirements													
<p>A. Formal requirements lack</p> <p>B. Prerequisites lack</p>													
Aims of education													
<p>familiarize students with the main aspects of chemical kinetics</p> <ul style="list-style-type: none"> - familiarize students with the Determining the rate law of a reaction - presenting the basis of chemical kinetics calculations - familiarize students with the factors influencing the reaction rate 													
Course contents													
<p>Introduction to Chemical Kinetics, the rate of reaction, stoichiometry and order, zero order reactions, first order reactions, second order reactions, determination of reaction order, and effect of factors on the rate of chemical reactions. Practical chemical kinetics in solution. The material that will be covered in this subject is intended to provide you with the tools and understanding to handle basic problems involving chemical systems of simple chemical reactions. Exercises (4 h). Methods of Determining Reaction Order (Zeroth-Order Reactions, First-Order Reactions, Second-Order Reactions. Determining the rate law of a reaction. Laboratory (7 h). The effect of the concentration and temperature on reaction rate in simple chemical reactions occurring in aqueous solutions.</p>													
Bibliography of literature													
<p>Literature required to pass the course</p> <ol style="list-style-type: none"> 1. Wright Margaret Robson, Introduction to Chemical Kinetics, John Wiley and Sons Ltd 2. Soustelle Michel, An Introduction to Chemical Kinetics, John Wiley and Sons Ltd 3. Marin, Guy B., Kinetics of Chemical Reactions, Wiley-VCH GmbH <p>Extracurricular readings</p> <ol style="list-style-type: none"> 1. Turányi, Tamás, Analysis of Kinetic Reaction Mechanisms, Springer-Verlag GmbH 													
<p>The learning outcomes (for the field of study and specialization)</p> <p>Chemical Business: K_BCh_W01 describes in an advanced level the relationship between the economy and the functioning of the chemical industry K_BCh_W03 describes in an advanced level the techniques of higher mathematics and IT tools necessary to describe and model chemical phenomena and technological processes K_BCh_U08 uses the chemical nomenclature and engineering terminology properly</p> <p>Chemistry: K_W02 describes in an advanced level the properties of elements and the most important chemical compounds, enumerates the methods of their preparation and methods of analysis</p>	<p>Knowledge</p> <p>Students: know formulate definition of reaction rate and know examples of chemical reactions that occur at different rates, identify variables used to monitor reaction rates (i.e change per unit of time, Dx/Dt). Examples: pressure, temperature, pH., know the definitions: zero order reactions, first order reactions, second order reactions, are able to determine the sequence of reactions and are able to assess the influence of factors on the rate of chemical reactions, know main techniques of calculations in chemical kinetics.</p> <p>Skills</p> <p>Students should be able to:</p> <ul style="list-style-type: none"> - explain how a change in concentration, change in temperature, change in pH or a change in pressure influences the rate of a reaction. - to determine the order of reaction - determine the value of the rate constant - fitting the reaction model to the experimental values. <p>Social competence</p> <ul style="list-style-type: none"> - is active in extending knowledge and understands the need for continuous education 												

<p>K_W08 demonstrates knowledge of computational methods to solve problems in chemistry, physics, mathematics</p> <p>K_W10 enumerates and describes the aspects of the construction, operation and use of measuring apparatus and equipment used in experimental works in the field of chemistry and related sciences</p> <p>K_U01 identifies, analyses and solves problems in the field of broadly understood chemistry on the basis of the acquired knowledge</p> <p>K_U08 presents in an understandable way the facts about chemistry using a scientific language typical of chemical sciences</p> <p>K_U09 is able to learn independently</p> <p>K_K06 raises her/his professional and personal competences by using information provided in various sources</p> <p>Environmental Protection:</p> <p>K_OŚI_W01 describes in an advanced level physical, chemical and biological phenomena occurring in nature as well as geological, geomorphological and climatic conditions of the functioning of nature</p> <p>K_OŚI_U04 uses specialist language in the discussion and properly uses the nomenclature in the field of environmental protection and individual disciplines related to it</p> <p>K_OŚI_U09 prepares in Polish/English a short description of research, observation or problem task carried out during classes using appropriate scientific terminology</p> <p>K_OŚI_K05 identifies the level of her/his knowledge and skills, demonstrates the need to update knowledge about the environment and its protection, demonstrates the need for continuous professional training and personal development</p> <p>K_OŚI_K08 is responsible for and takes care of the specialist equipment entrusted to her/him for research and laboratory or field work</p>	<ul style="list-style-type: none"> - undertakes to work with a new topic or technique - engages in scientific discussions - understands the need to read scientific and popular science journals in order to expand and deepen knowledge - understands the need for lifelong learning, recognizing self-education as a standard and condition for success on the labor market and achieving professional success
<p>Contact</p> <p>dagmara.jacewicz@ug.edu.pl</p>	