University of Gdańsk

Subject card

Subject name and code	Diploma lecture - Why are chemical reactions running?, PG_00081849		
Field of study	Chemistry		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Optional subject group
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	academic	Assessment form	credit
Conducting unit	Faculty of Chemistry -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Elżbieta Jankowska	
	Teachers		

Lesson types

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: 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	30	5.0	15.0	50

Subject objectives

The lecture aims to:
- explaining to students why chemical reactions take place;

- familiarizing students with the importance of electronic and steric effects in the course of chemical reactions;
- explaining to students what factors affect the reactivity of molecules and determine the course of the reaction as well as its spontaneity, reversibility and irreversibility;
- familiarizing students with the role of the solvent in chemical reactions

Learning outcomes

Course outcome	Subject outcome	Method of verification
[CHEML3_K01] Identifies the level of her/his own knowledge and skills and the need for continuous learning and personal development.	The student: - shows creativity in independent work and the ability to cooperate during group work; - knows how to discuss and support his/her theses with substantive arguments - independently searches for information in scientific literature	[SK1] oral statement/conversation/ discussion
[CHEML3_U08] Presents in an understandable way the basic facts about chemistry using a scientific language typical of chemical sciences.	Student: - discusses the factors determining the possibility of a chemical reaction; - uses chemical terminology, which makes it possible to discuss the content of the lecture	[SU1] oral statement/conversation/ discussion
[CHEML3_W03] Explains the relationship between the structure of matter and its observed properties.	The student: - lists and characterizes the factors deciding about the course of the reaction and its speed and emerging products; - defines the equilibrium constant of the reaction and determines the factors influencing it; - uses the terms 'electronic effect', 'steric effect' for explanation reactivity of particles and the course of a chemical reaction	[SW5] implementation of a problem task
[CHEML3_W02] Describes the properties of elements and the most important chemical compounds, enumerates the methods of their preparation and methods of analysis.	The student: - knows the basic types of reaction mechanisms and methods of their determination	[SW5] implementation of a problem task

Subject contents

Atomic and molecular orbitals. Interactions leading to the formation of chemical bonds. Equilibrium of a chemical reaction, reactions reversible and irreversible. Addition, substitution and elimination reactions. The influence of the solvent on the course of the reaction. The role of the group departing in chemical reactions. Competing reactions.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
problem tasks	51.0%	70.0%
test	51.0%	30.0%

Recommended reading

Basic literature	J. Keeler, P. Wothers, Why chemical reactions happen, Oxford University Press 2003
Supplementary literature	M. Jones Jr., S.A. Fleming, Organic chemistry J. Clayden, N. Greeves, S. Warren, Organic chemistry
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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