University of Gdańsk

Subject card

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|---|---|---|---|---|---|---|---|
| Subject name and code | Diploma lecture - Why are chemical reactions running?, PG_00081849 | | | | | | |
| Field of study | Chemistry | | | | | | |
| Date of commencement of studies | October 2024 | | Academic year of realisation of subject | 2026/2027 | | | |
| Education level | Bachelor's studies | | Subject group | Obligatory subject group in the field of study<br>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:<br>- explaining to students why chemical reactions take place;<br>- familiarizing students with the importance of electronic and steric effects in the course of chemical reactions;<br>- 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;<br>- 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:<br>- shows creativity in independent work and the ability to cooperate during group work;<br>- knows how to discuss and support his/her theses with substantive arguments<br>- 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:<br>- discusses the factors determining the possibility of a chemical reaction;<br>- 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:<br>- lists and characterizes the factors deciding about the course of the reaction and its speed and emerging products;<br>- defines the equilibrium constant of the reaction and determines the factors influencing it;<br>- 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:<br>- 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**

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|---|---|
| Basic literature | J. Keeler, P. Wothers, Why chemical reactions happen, Oxford University Press 2003 |
| Supplementary literature | M. Jones Jr., S.A. Fleming, Organic chemistry<br>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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