



Subject card

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| Subject name and code | Enzymology, PG_00054732 | | | | | | |
| Field of study | Biotechnology | | | | | | |
| Date of commencement of studies | October 2023 | Academic year of realisation of subject | | | 2026/2027 | | |
| 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 | 4 | Language of instruction | | | Polish | | |
| Semester of study | 7 | ECTS credits | | | 2.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Pharmaceutical Technology and Biochemistry -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Iwona Gabriel | | | | | |
| | 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 | | 2.0 | | 18.0 | 50 |
| Subject objectives | Broadening the knowledge of the Enzymology field | | | | | | |

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| Learning outcomes | Course outcome | Subject outcome | Method of verification |
| | K6_W05 | The student identifies the basic classes of enzymes. Recognizes the properties of enzymes as biocatalysts. Explains the molecular basis of enzyme catalysis, inhibition and inactivation. Recognizes methods of enzyme structures determination. Identifies chemical and spectral methods of the active site characterisation. Defines methods of physiological regulation of enzyme activity. Describes the importance of enzymes in biotechnology and medicine. | [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge |
| | K6_W09 | The student explains the strategy of the protein purification process. Recognizes the methods used in the protein purification process, including: cell disintegration methods, chromatographic separation methods, electrophoretic methods. | [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge |
| | K6_W06 | The student identifies the basic classes of enzymes. Recognizes the properties of enzymes as biocatalysts. Explains the molecular basis of enzyme catalysis, inhibition and inactivation. Recognizes methods of enzyme structures determination. Identifies chemical and spectral methods of the active site characterisation. Defines methods of physiological regulation of enzyme activity. Describes the importance of enzymes in biotechnology and medicine. | [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge |
| Subject contents | <p>Course content – lecture</p> <p>LECTURE General characteristics of enzymes. Enzymes as catalysts. Classification and nomenclature. The specificity of the enzyme activity. Mono- and oligomeric enzymes. Cofactors. The basic elements of the structure enzymes and the molecular basis of enzymatic catalysis. Active center. The theory of induced fit. Transition state theory. Strategy in the enzyme purification. Methods for determining the structure of the enzyme. Determination of the molecular weight. Determination of amino acid composition. Determination of the 3D structure. Chemical and spectral methods for analyzing the active center of the enzyme. Enzyme kinetics. inhibition and inactivation. Molecular mechanisms of enzymatic reactions. Types of enzymes inhibitors. Methods for physiological regulation of enzyme activity. Rybozymes.</p> | | |
| Prerequisites and co-requisites | Basic knowledge of biochemistry | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Test II | 60.0% | 50.0% |
| | Test I | 60.0% | 50.0% |
| Recommended reading | Basic literature | <p>1. Biochemia / Jeremy M. Berg, Lubert Stryer, John L. Tymoczko, Gregory J. Gatto. Warszawa, 2019</p> <p>2. Enzymologia : podstawy / Sławomir Strumiło, Adam Tylicki. Wydanie I. Warszawa, 2020</p> | |
| | Supplementary literature | Not applicable | |
| | eResources addresses | | |

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| Example issues/ example questions/ tasks being completed | General characteristics of enzymes. Active center. Chemical and spectral methods for analyzing the active center of the enzyme. Enzyme kinetics. Inhibition and inactivation. Molecular mechanisms of enzymatic reactions. Methods for physiological regulation of enzyme activity. Enzymes in biotechnology. |
| Practical activities within the subject | Not applicable |

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