



Subject card

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|---|---|--|-------------------------------------|------------|--|---------|-----|
| Subject name and code | Basic Biotechnology, PG_00047872 | | | | | | |
| Field of study | Biomedical Engineering, Biomedical Engineering, Biomedical Engineering | | | | | | |
| Date of commencement of studies | October 2022 | Academic year of realisation of subject | | | 2024/2025 | | |
| Education level | first-cycle studies | Subject group | | | Optional subject group 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 | 3 | Language of instruction | | | Polish | | |
| Semester of study | 5 | ECTS credits | | | 3.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Pharmaceutical Technology and Biochemistry -> Faculty of Chemistry | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Piotr Szweda | | | | | |
| | Teachers | dr hab. inż. Piotr Szweda dr inż. Karolina Matejczuk | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 15.0 | 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 | Getting knowledge in the field of basic aspects of pharmaceutical and medicinal biotechnology and getting skills in selected laboratory techniques and experimental methods in these fields | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [K6_U51] can conduct laboratory work connected with chemistry and biochemistry, specific to biomedical engineering | The student uses basic research tools and techniques relevant to biological and medical sciences. The student performs simple research tasks under the supervision of a research tutor. | | | [SU1] Assessment of task fulfilment | | |
| | [K6_W52] Knows and understands, to an advanced extent, selected aspects of chemistry and biochemistry, constituting general knowledge related to the field of study | The student has knowledge of microorganisms and the possibility of their use in biotechnological processes. The student knows the methods of obtaining biologically active substances using various technologies, methods of improving the properties of these substances and the possibilities of their use in industry, agriculture, medical diagnostics and therapy The student has knowledge of molecular techniques and technologies used in the research of genetic material as well as in the design and modification of it | | | [SW1] Assessment of factual knowledge | | |

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| Subject contents | <ul style="list-style-type: none"> • Subject and scope of biotechnology • Public reception and ethical aspects of modern biotechnology • GMO, biopesticides and biopolymers • Biotechnology in environmental protection • Types of cells used in biotechnology • Basic techniques of genetic engineering - gene cloning, PCR • Technologies of production of recombinant proteins and therapeutic nucleic acids • Industrial biotechnological processes • Methods of cultivation of mammalian tissue cultures • Biotechnologies of antibodies construction and production • Methods of tissue regeneration with use of stem and somatic cells • Gene therapy and antisense strategy • Nanobiotechnology | | |
| Prerequisites and co-requisites | Knowledge of basic principles of biochemistry and biochemical experimental techniques | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Written exam | 60.0% | 80.0% |
| | Evaluation of the reports on experimental exercises | 60.0% | 20.0% |
| Recommended reading | Basic literature | Materials available for e-learning | |
| | Supplementary literature | J. Buchowicz, Biotechnologia molekularna, PWN W-wa 2007 O. Kayser, Podstawy biotechnologii farmaceutycznej, Wydawnictwo UJ, Kraków W-wa, 2006 | |
| | eResources addresses | Adresy na platformie eNauczenie: | |
| Example issues/ example questions/ tasks being completed | Please discuss the principle of operation of the lactose operon. Please describe the types of stem cells. Please provide examples of beta-lactam antibiotics, what is their molecular target in bacterial cells. What are probiotics? | | |
| Work placement | Not applicable | | |

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