

Subject card

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| Subject name and code | Biotechnology in medicine - Therapies and medical technologies Methodology (M05_B3), PG_00197679 | | | | | | |
| Field of study | Biotechnology | | | | | | |
| 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 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 | | | 2.0 | | |
| Learning profile | academic | Assessment form | | | credit | | |
| Conducting unit | UG Institute of Biotechnology -> Intercollegiate Faculty of Biotechnology UG-MUG -> Rector | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr Grzegorz Gołuński | | | | |
| | Teachers | | | | | | |
| Lesson types | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 0.0 | 0.0 | 20.0 | 0.0 | 0.0 | 20 |
| | 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 | 20 | 5.0 | 25.0 | 50 | | |
| Subject objectives | The aim of the course is familiarization of the student with the applications of selected methods of statistical analysis in biotechnology, especially in its medical aspect. | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [BIOTECHL3_U03] The graduate is able to use basic mathematical and statistical methods to describe phenomena and analyse data; analyse basic data in professional databases used in biotechnology | The student(s) will understand the fundamental statistical techniques used in medical biotechnology, such as regression analysis, multivariate approaches, parametric (Student's t, ANOVA), and non-parametric (Mann-Whitney U, Wilcoxon) tests. The concepts of biological experiment design, such as sampling, randomization, and confounding variable control, are also understood by the student (s). | | | [SU1] oral statement/conversation/discussion [SU3] text preparation/written work [SU4] test/exam - oral or written | | |

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| Subject contents | <p>Verification of statistical hypothesis and selected issues of statistical inference a) parametric and non-parametric tests, criteria for selecting tests of differences significance b) comparison of two samples: Student's t-test, Cochran-Cox test c) non-parametric equivalents of the Student's t-test (Mann-Whitney test, Wilcoxon test; Wald-Wolfowitz runs test, Kolmogorov-Smirnov test) d) one-way analysis of variance (ANOVA), post-hoc tests e) non-parametric equivalents of analysis of variance (Kruskal-Wallis test, Friedman test) f) analysis of qualitative data (chi-square test, Fisher's exact test, Yates correction) g) introduction to the analysis of interdependence of phenomena (correlation, regression, R coefficients, R square)</p> | | |
| Prerequisites and co-requisites | Knowledge of the Modules 01-04 contents | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | report | 51.0% | 15.0% |
| | practical test | 51.0% | 70.0% |
| | oral exam | 51.0% | 15.0% |
| Recommended reading | Basic literature | <ul style="list-style-type: none"> Materials provided by the lecturer Andrzej Stanisław, Przystępny kurs statystyki. Tom 1. Statystyki podstawowe, Wydawnictwo StatSoft, Kraków 2006 | |
| | Supplementary literature | <ul style="list-style-type: none"> Andrzej Balicki, Wiesława Makać, Metody wnioskowania statystycznego, Wydawnictwo UG, Gdańsk 2010 Włodzimierz Meissner, Metody statystyczne w Biologii, Wydawnictwo UG, Gdańsk 2011 Wiesława Makać, Danuta Urbanek-Krzysztofiak; Metody opisu statystycznego, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2020 Tomasz Górecki; Podstawy statystyki z przykładami w R, Wydawnictwo BTC, Legionowo 2011 | |
| | eResources addresses | | |
| Example issues/ example questions/ tasks being completed | | | |
| Work placement | Not applicable | | |

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