University of Gdańsk

Subject card

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| Subject name and code | Unicellular organisms - Structure, diversity and environment Methodology (M03_B1), PG_00153672 | | |
| Field of study | Organizmy jednokomórkowe - Budowa, różnorodność i środowisko życia Metodologia (M03_B1) | | |
| Date of commencement of studies | October 2024 | Academic year of realisation of subject | 2025/2026 |
| Education level | Bachelor's studies | Subject group | |
| Mode of study | full-time studies | Mode of delivery | at the university |
| Year of study | 2 | Language of instruction | Polish |
| Semester of study | 3 | ECTS credits | 2.0 |
| Learning profile | academic | Assessment form | credit |
| Conducting unit | Research and Development Laboratory -> UG Institute of Biotechnology -> Intercollegiate Faculty of Biotechnology UG-MUG -> Rector | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr Natalia Kaczyńska | |
| | Teachers | dr Natalia Kaczyńska<br>dr Anna Kawiak | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 0.0 | 0.0 | 24.0 | 0.0 | 0.0 | 24 |

E-learning hours included: 0.0

eNauczanie source addresses:
Moodle ID: 12968 ATC-MWB-BTCH-L3DZ-(2025/2026) M03_B1_METODOLOGIA_Organizmy jednokomórkowe - Budowa, różnorodność i środowisko życia
https://mdl.ug.edu.pl/course/view.php?id=12968

**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 | 24 | 10.0 | 30.0 | 64 |

**Subject objectives**

The aim of this course is to familiarize students with the diversity of unicellular organisms, their adaptation to different environments, and their interactions with higher organisms. The students will acquire skills related to planning and conducting experiments using microorganisms. They will obtain all the necessary skills for conducting laboratory tasks safetly (independently or in a group). They will be able to analyze, evaluate, and discuss the obtained results and draw conclusions based on them. In the case of an experiment failure, they will be able to identify its putative causes.

## Learning outcomes

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [BIOTECHL3_W01] The graduate knows and understands basic biological phenomena at the molecular level, he/she is familiar with their significance for biotechnology. | The student understands the basic biological and physiological properties of microorganisms, including cell structure, morphology, staining reactions, and the effects of physicochemical factors. The student knows the importance of these characteristics for work in a microbiological laboratory. | [SW4] test/egzamin - ustny lub pisemny |
| [BIOTECHL3_U01] The graduate is able to do basic laboratory work; document activities and results; use basic techniques under the supervision of the supervisor in laboratory work and research tools necessary in biotechnology, with particular emphasis on the analysis of methods of isolation, modification, selection and analysis of organisms, tissues, cells and molecules; handle basic laboratory equipment. | The student is able to apply basic microbiological techniques and independently operate standard laboratory equipment (including a microwave sterilizer and an incubator). The student correctly performs inoculations, prepares basic culture media, cultivates microorganisms, and carries out and interprets bacterial and yeast cell staining. All procedures and results are documented in a laboratory notebook. | [SU2] prezentacja/projekt/referat/ raport<br>[SU3] opracowanie tekstowe/ praca pisemna<br>[SU4] test/egzamin - ustny lub pisemny<br>[SU5] realizacja zadania problemowego<br>[SU6] demonstracja umiejętności praktycznych |
| [BIOTECHL3_K01] The graduate is willing to know the limitations of his/her own knowledge and skills; constantly improve, update knowledge, and raise qualifications in biotechnology in the sicience and natural sciences, as well as medical sciences and health sciences | The student is able to search for up-to-date information on the current state of knowledge and techniques in microbiology and use it to update their own knowledge. The student analyzes the causes of experimental failure and identifies potential sources of error (e.g., contamination, pipetting errors). | [SK1] wypowiedź ustna/rozmowa/ dyskusja<br>[SK8] obserwacja samodzielnej lub zespołowej pracy studenta |
| [BIOTECHL3_K04] The graduate is willing to understand the importance of work safety rules, in particular laboratory work; apply the principles of work safety; be responsible for his/her own safety and that of others; be able to act in emergency situations. | The student follows safety rules when working with microorganisms, uses personal protective equipment (such as a lab coat and gloves), and properly manages the segregation of biological waste. | [SK6] demonstracja umiejętności praktycznych<br>[SK8] obserwacja samodzielnej lub zespołowej pracy studenta |
| [BIOTECHL3_U02] The graduate is able to plan and organise work effectively, independently or as part of a team, in particular work in a laboratory | The student is able to plan microbiological experiments and organize team-based work, including assigning roles, using collaboration tools, and managing data exchange. | [SU1] wypowiedź ustna/rozmowa/ dyskusja<br>[SU6] demonstracja umiejętności praktycznych<br>[SU8] obserwacja samodzielnej lub zespołowej pracy studenta |
| [BIOTECHL3_W03] The graduate knows and understands selected issues of organism-environment interdependence | The student understands how physicochemical factors affect the functioning of microorganisms and is familiar with selected examples of microbial adaptation to specific environmental conditions. | [SW4] test/egzamin - ustny lub pisemny |

## Subject contents

## Prerequisites and co-requisites

## Assessment methods and criteria

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Part M1 | 51.0% | 100.0% |

## Recommended reading

Basic literature

Prescotts Microbiology (wybrane rozdziały: 27,28,29, part of 30, 40, 41,42) J. M. Willey, L. M. Sherwood, C. J. Woolverton, 8th edition, McGraw-Hill, 2011 Mikrobiologia - Jadwiga Baj (red. nauk.) Wydawnictwo Naukowe PWN SA, Warszawa 2018. Życie bakterii Kunicki-Goldfinger, red. J. Baj, Z. Markiewicz, Wydawnictwo Naukowe PWN, W-wa 2005 i późniejsze Mikrobiologia techniczna. T. 1 Mikroorganizmy i środowiska ich występowania (wybrane rozdziały) - Zdzisława Libudzisz (red.), Krystyna Kowal (red.), Zofia Żakowska (red.), 2007, Wydawnictwo Naukowe PWN Cappuccino, James G.; Welsh, Chad T, Microbiology: A Laboratory Manual, Global Edition Pearson Education Limited : Pearson, 2017

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| | Supplementary literature | Microbiology: an introduction. Gerard J. Tortora, Berdell R. Funke, Christine L. Case, 2016, Pearson Prescotts Microbiology Joanne Willey [10th ed.] 2016. McGraw-Hill Education, Mikrobiologia Murray Rosenthal Wydanie 2018 EDRA URBAN & PARTNER Brock biology of microorganisms, global edition, 15/e M. T. Madigan, K. S. Bender, D. H. Buckley, W. M. Sattley, D. A. Stahl, 2018. Pearson. Sherman F., (2002) Getting started with yeast. Methods Enzymol. 350: 3-41. |
| | eResources addresses | |
| Example issues/ example questions/ tasks being completed | | |
| Work placement | Not applicable | |

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