

## Subject card

|                                             |                                                                                                                                                                                                                                                                                                                                                             |                                                          |                                         |                                     |         |                                                                                                                      |     |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------|-------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------|-----|
| Subject name and code                       | General microbiology, PG_00146887                                                                                                                                                                                                                                                                                                                           |                                                          |                                         |                                     |         |                                                                                                                      |     |
| Field of study                              | Genetics and Experimental Biology                                                                                                                                                                                                                                                                                                                           |                                                          |                                         |                                     |         |                                                                                                                      |     |
| Date of commencement of studies             | October 2025                                                                                                                                                                                                                                                                                                                                                |                                                          | Academic year of realisation of subject |                                     |         | 2025/2026                                                                                                            |     |
| Education level                             | Bachelor's studies                                                                                                                                                                                                                                                                                                                                          |                                                          | Subject group                           |                                     |         | Obligatory subject group in the field of study<br>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                               | 1                                                                                                                                                                                                                                                                                                                                                           |                                                          | Language of instruction                 |                                     |         | Polish                                                                                                               |     |
| Semester of study                           | 2                                                                                                                                                                                                                                                                                                                                                           |                                                          | ECTS credits                            |                                     |         | 3.0                                                                                                                  |     |
| Learning profile                            | academic                                                                                                                                                                                                                                                                                                                                                    |                                                          | Assessment form                         |                                     |         |                                                                                                                      |     |
| Conducting unit                             |                                                                                                                                                                                                                                                                                                                                                             |                                                          |                                         |                                     |         |                                                                                                                      |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                                                                                          |                                                          | dr hab. Magdalena Plotka                |                                     |         |                                                                                                                      |     |
|                                             | Teachers                                                                                                                                                                                                                                                                                                                                                    |                                                          |                                         |                                     |         |                                                                                                                      |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                                                                                                                                 | Lecture                                                  | Tutorial                                | Laboratory                          | Project | Seminar                                                                                                              | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                                                                                       | 0.0                                                      | 0.0                                     | 30.0                                | 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                                                       |                                         | 8.0                                 |         | 37.0                                                                                                                 | 75  |
| Subject objectives                          | Understanding the relationship between the structure and function of bacteria. Understanding the relationships between basic metabolic processes. Understanding the mechanisms regulating bacterial metabolism. Understanding the factors determining the virulence of bacteria and viruses. Learning about methods of preventing and combating infections. |                                                          |                                         |                                     |         |                                                                                                                      |     |

| Learning outcomes               | Course outcome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Subject outcome                                                                                                                                                                                                                                                                                                                                                                                                                                     | Method of verification                                                                             |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|                                 | [GBEL3_U01] Independently perform practical tasks in the field of biological sciences and related disciplines, formulate research problems, analyze their results, and draw conclusions.                                                                                                                                                                                                                                                                                                            | is able to carry out simple experiments in the field of microbiology, interpret the obtained results and draw conclusions                                                                                                                                                                                                                                                                                                                           | [SU6] demonstration of practical skills<br>[SU8] observation of student's independent or team work |
|                                 | [GBEL3_U07] Work in a team and organize work while adhering to occupational health and safety principles and ergonomics.                                                                                                                                                                                                                                                                                                                                                                            | is able to work in a team to analyze biological problems related to the topics of the classes                                                                                                                                                                                                                                                                                                                                                       | [SU8] observation of student's independent or team work                                            |
|                                 | [GBEL3_K05] Responsibility for the safety of one's own work and others.                                                                                                                                                                                                                                                                                                                                                                                                                             | uses basic equipment and research tools when performing activities in a microbiology laboratory and maintains his/her own and others' safety                                                                                                                                                                                                                                                                                                        | [SK8] observation of student's independent or team work                                            |
|                                 | [GBEL3_W06] the development and current state of knowledge, as well as the latest trends in molecular genetics and related fields; indicating their relationship with other disciplines in the natural or medical sciences and the possibilities of their practical application.                                                                                                                                                                                                                    | is familiar with the current state of knowledge and the latest trends in microbiology, indicates their relationship with other disciplines of natural or medical sciences                                                                                                                                                                                                                                                                           | [SW4] test/exam - oral or written                                                                  |
|                                 | [GBEL3_W03] The molecular mechanisms of genetic information transmission and gene expression, as well as the molecular and genetic basis of human physiology and diseases, including infectious diseases.                                                                                                                                                                                                                                                                                           | understands the basic physiological processes in bacteria and their relationship to causing infectious diseases in humans and animals                                                                                                                                                                                                                                                                                                               | [SW4] test/exam - oral or written                                                                  |
|                                 | [GBEL3_W01] Understanding the structure and properties of basic types of biological macromolecules, molecular mechanisms of metabolic pathways and genetic information flow, as well as sources of genetic variability in organisms and mechanisms of evolution; explaining the rules of inheritance, elucidating differences in the structure and functioning of prokaryotic and eukaryotic cells, and understanding the structure and functional relationships at the cellular and tissue levels. | characterizes the basic components and explains the differences in the functioning of prokaryotic and eukaryotic cells                                                                                                                                                                                                                                                                                                                              | [SW4] test/exam - oral or written                                                                  |
| Subject contents                | Issues of laboratory work. Learning about research techniques and methods used in microbiology. Learning about the principles of safe work in a microbiology laboratory. Review of selected groups of bacteria.                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                    |
| Prerequisites and co-requisites | Completed organic chemistry course                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                    |
| Assessment methods and criteria | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Passing threshold                                                                                                                                                                                                                                                                                                                                                                                                                                   | Percentage of the final grade                                                                      |
|                                 | written test                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                               | 100.0%                                                                                             |
| Recommended reading             | Basic literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>A. Literature required for final crediting of classes: A.1. used during classes Kunicki-Goldfinger W. J. H. 1998. Life of bacteria. PWN, Warsaw. Markiewicz Z. 1993. Structure and functions of bacterial envelopes. PWN, Warsaw. Eligia M. Szewczyk: Bacteriological diagnostics PWN 2006 A.2. studied independently by the student Baj, J. Markiewicz, Z.: Molecular biology of bacteria, Warsaw, 2006 Streyer, L.: Biochemistry, PWN 1997</p> |                                                                                                    |

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|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                | Supplementary literature                                                                                                                                                                                                                                                                                                                                                                                     | Jawetz E., Melnick J., Adelberg E. 1991. Review of medical microbiology. PZWL, Warsaw. Piekarowicz : Fundamentals of molecular virology, PWN 2004 Wons E, Mruk I, Kaczorowski T. Relaxed specificity of prokaryotic DNA methyltransferases results in DNA site-specific modification of RNA/DNA heteroduplexes. J Appl Genet. 2015 Nov; 56(4):539-546 |
|                                                                | eResources addresses                                                                                                                                                                                                                                                                                                                                                                                         | Adresy na platformie eNauczenie:                                                                                                                                                                                                                                                                                                                      |
| Example issues/<br>example questions/<br>tasks being completed | <p>1. The Enterobacteriaceae family includes: a) <i>Vibrio</i>, <i>Bacillus</i>, <i>Clostridium</i> b) <i>Citrobacter</i>, <i>Klebsiella</i>, <i>Escherichia</i> c) <i>Neisseria</i>, <i>Vibrio</i>, <i>Staphylococcus</i> d) <i>Aeromonas</i>, <i>Candida</i>, <i>Serratia</i></p> <p>2. What diseases do the following bacteria cause:</p> <p><i>Mycobacterium tuberculosis</i> <i>Vibrio cholerae</i></p> |                                                                                                                                                                                                                                                                                                                                                       |
| Work placement                                                 | Not applicable                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                       |

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