

# Microbiology - course description

General information	
Course name	Microbiology
Course ID	13.4-WB-OS2P-Mikrob-S17
Faculty	<a href="#">Faculty of Biological Sciences</a>
Field of study	Environmental Protection
Education profile	academic
Level of studies	First-cycle studies leading to Bachelor's degree
Beginning semester	winter term 2021/2022

Course information	
Semester	4
ECTS credits to win	5
Course type	obligatory
Teaching language	english
Author of syllabus	<ul style="list-style-type: none"><li>prof. dr hab. Michał Stosik</li><li>dr Sylwia Andrzejczak-Grządko</li></ul>

Classes forms					
The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	30	2	-	-	Exam
Laboratory	45	3	-	-	Credit with grade

## Aim of the course

Acquire by the student the theoretical and practical knowledge, resulting in the student should describe: biological and physiological functions of bacteria and fungi; metabolic processes and their regulation in these organisms; possibilities of using biological potential of bacteria and fungi in biotechnology; biological properties and regulatory functions of viruses. As part of the laboratory classes students should know the basic principles of safe work in the biological laboratory, master the techniques of microbial breeding and principles of microbiological diagnostics.

## Prerequisites

Knowledge of basic biology / microbiology, chemistry, biochemistry at secondary level.

## Scope

Lecture: Place of microorganisms in the world of living organisms. Structure and function of the bacterial cell. Metabolic processes of bacteria and mechanisms of their regulation. Genetics of bacteria. Bacteria in the environment. Microbial associations with other microorganisms. Viruses and their biological properties. Fungi and their biological properties. Pathogenic microorganisms for plants, animals and humans.

Laboratory classes: Microscopic observations. Size and shape of microorganisms. Gram stain. Complex staining - structural elements of bacteria. Decontamination. Microbiological growth media. Culturing techniques. Isolation of bacteria - pure cultures. Quantification and enumeration of bacteria. Testing sensitivity to antimicrobial substances. Diagnostic tests.

## Teaching methods

- feeding method (lecture in the form of multimedia presentation),

- practical (laboratory exercises using classical and molecular techniques used in microbiological studies)

## Learning outcomes and methods of their verification

Outcome description	Outcome symbols	Methods of verification	The class form
explains the principles of using techniques used in microbiological research, has knowledge of the use of laboratory equipment in a microbiological laboratory	<ul style="list-style-type: none"><li><a href="#">K1A_W28</a></li></ul>	<ul style="list-style-type: none"><li>a test</li></ul>	<ul style="list-style-type: none"><li>Laboratory</li></ul>
uses literature sources, also electronic ones, can interpret and combine information obtained in a coherent way, uses self-learning methods and sees the need to learn and improve your cognitive skills; is aware of dynamic changes in knowledge, takes care of updating it	<ul style="list-style-type: none"><li><a href="#">K1A_U08</a></li></ul>	<ul style="list-style-type: none"><li>a final test</li><li>a test</li></ul>	<ul style="list-style-type: none"><li>Lecture</li><li>Laboratory</li></ul>
works in a group and organizes work in a specific area	<ul style="list-style-type: none"><li><a href="#">K1A_K01</a></li></ul>	<ul style="list-style-type: none"><li>a test</li></ul>	<ul style="list-style-type: none"><li>Laboratory</li></ul>
apply the principles of safe work in the laboratory; plans and conducts an experiment; He can use the researched techniques (biological material preparation, microscopic analysis); interprets and draws conclusions; He can use the acquired skills in the professional environment and in other environments	<ul style="list-style-type: none"><li><a href="#">K1A_U07</a></li></ul>	<ul style="list-style-type: none"><li>a test</li></ul>	<ul style="list-style-type: none"><li>Laboratory</li></ul>

Outcome description	Outcome symbols	Methods of verification	The class form
knows and understands the basics of general microbiology in the field of bacteriology, virology and mycology	<ul style="list-style-type: none"> <li>• <a href="#">K1A_W27</a></li> </ul>	<ul style="list-style-type: none"> <li>• a final test</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Laboratory</li> </ul>

## Assignment conditions

Lecture - final exam, which the student is admitted on the basis of the prior pass of the laboratory classes. Exam: I term - written form - 50 question test, further deadlines – oral. Exam time - 90 min. Rating - satisfactory - over 60% of all points.

Laboratory - knowledge tests (closed and open) - positive score over 60% of points obtained and practical skills test. Final score is the arithmetic mean of the partial scores.

## Recommended reading

1. Basic Practical Microbiology. Society for General Microbiology 2006
2. Essential Microbiology. S. Hogg. John Wiley & Sons Ltd. 2005
3. Medical microbiology. P. Murray, K. Rosenthal, M. Pfaller. Elsevier. 2016
4. Textbook of microbiology. C.K.J. Paniker. Orient Longman. 2005
5. Laboratory Manual and Workbook in Microbiology. J. A. Morello, P. A. Granato, H. E. Mizer. The McGraw-Hill Companies, 2003

## Further reading

1. Microbiology. M. Sattley, M.T. Madigan. John Wiley & Sons, Ltd. 2015

## Notes

Modified by dr Olaf Ciebiera (last modification: 19-05-2021 22:02)

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