COURSE DESCRIPTION

<table>
<tr><td colspan="10">Faculty of Civil Engineering and Environmental Sciences</td></tr>
<tr><td>Field of study</td><td colspan="6"></td><td>Degree level and programme type</td><td>BSc.</td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6"></td><td>Study profile</td><td>Academic profile</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Microbiology</td><td>Course code</td><td>IS-FCEE-00258W</td></tr>
<tr><td>Course type</td><td>Erasmus</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td>Winter</td></tr>
<tr><td>15</td><td></td><td>30</td><td></td><td></td><td></td><td></td><td>No. of ECTS credits</td><td>4</td></tr>
<tr><td>Entry requirements</td><td colspan="9">Biology</td></tr>
<tr><td>Course objectives</td><td colspan="9">To introduce students with the basics of taxonomy and diagnostics of microorganisms. To acquaint students with biological and biochemical processes occurring in cells of living organisms.</td></tr>
<tr><td>Course content</td><td colspan="9"><u>Lecture:</u> Characteristics of microorganisms (viruses, bacteria, archaea, protists, and fungi). Structure, growth and development of microorganisms, metabolic processes and their regulation mechanisms. Systematics of microorganisms. Characteristics of selected groups of microorganisms. Occurrence of microorganisms in natural environments (soil, water, air). Reciprocal relations between microorganisms in a biocenosis and between microorganisms and other organisms. Participation of microorganisms in the circulation of elements in nature. Participation of microorganisms in the purification of the environment. Bioremediation.
<u>Laboratory</u>: Principles of using different types of microscopes. Making different types of microbial culture preparations. Microbiological media. Identification of bacteria. Methods of determining the number of microorganisms. Sterilization. Disinfection. Mechanisms of germicidal action: heavy metals, ultrasonic detergents, UV radiation. Microbiological analysis of water, air.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">L – lecture, LC – laboratory classes</td></tr>
<tr><td>Assessment method</td><td colspan="9"></td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="7">Learning outcomes</td><td colspan="2">Reference to the learning outcomes for the field of study</td></tr>
<tr><td>LO1</td><td colspan="7">knows selected facts about microorganisms and preparations of industrial and technological importance as well as methods of their use in the implementation of biotechnological processes</td><td colspan="2"></td></tr>
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LO2	is able to apply basic analytical techniques in biology and microbiology	
LO3	knows and is able to plan activities and procedures to study microbial communities	
LO4	can indicate the possibility of practical use and works in a team performing relevant topics in microbiology and is prepared to critically assess knowledge and content received from the field of microbiology	
LO5		
Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	Written exam, Colloquium	**L, LC**
LO2	Colloquium	**LC**
LO3	Written exam, Colloquium	**L, LC**
LO4	Colloquium	**LC**
LO5		

Student workload (in hours)		**No. of hours**
Calculation	Participation in lectures	**15**
	Participation in laboratory classes	**30**
	Preparation for the written exam in lectures	**10**
	Preparation for laboratory tests	**10**
	Preparation for and attendance at the examination	**10**
	Participation in consultations	**5**
	TOTAL:	

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	**55**	**2**
Student workload – practical activities	**65**	**2,6**

Basic references	Gerard J. Tortora, Berdell R. Funke and Christine L. Case. 2018. Microbiology: An Introduction, 13th Edition. Pearson. ISBN 978-0134605180 Prescott, Harley and Klein. 2008. Microbiology, 7th Edition. McGraw-Hill, Inc. ISBN: 0390591505.
Supplementary references	Madigan and Martinko. 2006. Brock Biology of Microorganisms, 11th edition. Prentice Hall, Inc. ISBN 0131968939.

Organisational unit conducting the course	**Department of Chemistry, Biology and Biotechnology**	**Date of issuing the programme**
Author of the programme	**Dr hab inż Elżbieta Wołejko**	**14.01.2022**

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar