POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)
pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Microbiology

Course

Field of study	Year/Semester
Bioinformatics	1/2
Area of study (specialization)	Profile of study
-	general academic
Level of study	Course offered in
First-cycle studies	Polish
Form of study	Requirements
full-time	compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	15	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

prof. Ewa Kaczorek

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Faculty of Chemical Technology

Berdychowo 4, 60-965 Poznan

Responsible for the course/lecturer:

Prerequisites

This course recquires that the student posesses basic konwledge in biology and chemistry. In addition, student should be able to obtain information using the indicated sources and be aware of the need to develop their competences.

Course objective

The course is intended to develop theoretical knowledge and basic practical skills while working with microorganisms. At the end of this course the student shoud possess the knowledge in the field of basic microbiology. The student should understand impact of cultivation conditions on the bacterial growth, properties of the selected groups of microorganisms and their pathogenicity, basis of microbiological diagnostics and epidemiology.

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Course-related learning outcomes

Knowledge

The graduate knows and understands:

- cell's structure and functions of cellular structures, biochemical basis of metabolic pathways (K_W06)

- molecular mechanisms of evolution and basics of organisms diversity (K_W07)

Skills

The graduate is able to:

- obtain information using literature, databases and other properly selected sources, also in English (K_U01)

- integrate and interpret information obtained, draw conclusions as well as formulate and justify their opinions (K_U02)

- use basic tool and laboratory techniques to solve problems in the field of bioinformatics, biotechnology and related disciplines, evaluate their usefulness (K_U05)

- acquire knowledge independently and improve their qualifications (K_U016)

Social competences

The graduate is ready to:

- lifelong learning and improving theirs qualifications (K_K01)

- take responsibility for the safety of their own work and that of others; taking appropriate actions in emergency states (K_K06)

- function as and university graduate (K_K08)

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: after the end of the lecture series, students' knowledge will be verified based on a written exam which will include open and closed questions. The latter will include theoretical and practical aspects. Pass/fail threshold 50%.

Laboratories: during the laboratory classes, the knowledge of students will be verified based on short tests regarding theoretical knowledge in the scope of the exercise. In addition, the knowledge regarding the course of the exercise and practical knowledge necessary to safely conduct the experiment will be verified by the teacher. A passing grade will be based on correct execution of the planned experiments as well as passing the tests and teacher's questions. Pass/fail threshold 50%.

Programme content

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The lectures will cover the following theoretical issues: introduction to microbiology, general characteristics of microorganisms (morphology, physiology, metabolism, genetics). Techniques of isolation and identification of microorganisms. Antibiotics and chemotherapeutics. Antimicrobial resistance. Classification, characterictics and pathogenicity of selected groups of bacteria, fungi and viruses. Basics of microbiological diagnostics. Hospital-acquired infections, alert pathogens, basics of epidemiology.

The laboratory courses will cover the following issues: health and safety training in a microbiological laboratory, microscopy, stains and stainig, culture techniques, cultivation of bacteria, control of microbes (disinfection, antiseptic, sterilisation), basics in microbiological diagnostics of selected bacteria and fungi.

Teaching methods

Lecture: multimedia presentation, scientific discussions with students.

Laboratories: health and safety training, practical experiments which will include getting accquainted with basic techniques used during microbiological experiments, independent preparation of microscopic slides and culture media, bacterial cultivating, determining of bacterial sensitivity to antibiotics, characterizing the main groups of microorganisms, preparing test protocols.

Bibliography

Basic

- Eligia M. Szewczyk, Diagnostyka bakteriologiczna, Polish Scientific Publishers PWN 2019

- Beata Dudzińska Bajorek, Skrypt do ćwiczeń z mikrobiologii dla studentów kierunków medycznych i inzynierskich, wyd. Państwowa Wyższa Szkoła Zawodowa im. Hipolita Cegielskiego w Gnieźnie 2020

Additional

- Gabriel Virella, Mikrobiologia i choroby zakaźne, Edra Urban & Partner Publisher 2015

- Jadwiga Baj, Mikrobiologia, Polish Scientific Publishers PWN 2018

- Gerard J. Tortora, Berdell R. Funke, Christine L. Case, Microbiology: An Introduction, 13th Edition, Pearson 2018

- Joanne Willey, Linda Sherwood and Christopher J. Woolverton, Prescott's Microbiology, 10th Edition 2017

- Władysław Kunicki-Goldfinger, Życie bakterii, Polish Scientific Publishers PWN 2007

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Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam) [1]	20	0,5

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[1] delete or add other activities as appropriate