Degree level: Bachelor degree

Course Title: **GENERAL MICROBIOLOGY**

Course status: Elective

ECTS**:** 5

Requirements**:** none

Learning objectives:

Understanding the functional structure and metabolism of microorganisms in order to understand their diversity, importance to man and their role in natural ecosystems**.**

Learning outcomes:

Student should be able to:

- Understand the morphology, the basic principles of the microbial growth, the main metabolic pathways and the major strategies of obtaining energy of different groups of organisms;
- Differentiate the main groups of prokaryotic organisms and viruses;
- Understand the basic principles of applied microbiology;
- Correctly apply the basic principles important for work in the microbiological laboratory.

Syllabus:

Theoretical part

Basic facts about microorganisms through the following lectures: Brief history of microbiology and its relationship with other scientific disciplines; Comparative review of morphology, functional structure and reproduction of prokaryotic organisms; bacteria, cyanobacteria, actinomycetes, viruses; Microbial nutrition, Reproduction, genetics and metabolism; Criteria for classification of microorganisms, review of main a group of prokaryotes; General characteristics of viruses, viroids and prions; Microbial mechanisms of pathogenicity; Nonspecific and specific defenses of the host; Bacteria as causative agents of human deseases, a survey of commonly used antibacterial antibiotics; Brief introduction to the ecology of microorganisms; Basic principles of biotechnology and short review of application of microorganisms in industry and environmental protection.

Practical part

Laboratory exercises provide students with the skills and tools that enable them to explore a vast microbial world. They learn how to handle cultures in such a way that they are not contaminated. This involves learning aseptic techniques and practicing preventive safety measures. Working with the microscopes. Practicing preparation and sterilization of microbiological media and cultivation of microorganisms. Understanding the morphology of microorganisms using simple and Gram staining. Determination of number of cultivable bacteria from the water on different microbiological media. Isolation and cultivation of bacteria and determination of their cultural characteristics using different bacteriological media.

Total hours:			
Lectures: 3	Practicals: 2	Other: -	Student research work: -

Methods of instruction: