

01S1-MIKRO

MICROBIOLOGY

ECTS: 3.5

HOURS PER SEMESTER/WEEK: LECTURES: 15/1; CLASSES: 30/2

COURSE CONTENTS

LECTURES: Systematics and classification of microorganisms. Distribution of microorganisms in the biosphere. Characteristics of: bacteria, mold fungi, yeast and viruses. Genetically modified microorganisms. Microbial metabolism: nutrition, aerobic respiration, anaerobic respiration, fermentation, reproduction, photosynthesis. Basic mechanisms of metabolism and energy transformations. Consistency, variability, recombination and transmission of genetic information. Fixation of molecular nitrogen. Decomposition of organic and mineral compounds. Microbial ecology. The importance of microorganisms in agriculture. The use of microorganisms in food production and processing. Characteristics of selected pathogenic microorganisms.

CLASSES: Techniques of microscopy. Preparation of microbiological preparations. Isolation, cultivation and diagnostics of microorganisms. Growth and multiplication of microorganisms. Morphology and cytology of bacteria, mold fungi, yeast. Methods for determining the number and biomass microbes. The influence of physical and chemical factors on microorganisms. Mutual relations between microorganisms. Transformation of various substances by microorganisms. The relationship between microorganisms and higher organisms.

EDUCATIONAL PURPOSE: Provide knowledge of general microbiology. Awareness of the role of microorganisms in the biosphere, with a focus on agricultural production.

LEARNING OUTCOMES

Knowledge. The student recognizes the individual groups of microorganisms. Indicates the differences between them. Has skills in the use of basic techniques in a microbiological laboratory. Searches for, analyzes and uses literature in the field of microbiology.

Skills.

Social competences. The student appreciates the importance of microorganisms in the functioning of the biosphere. It cares about the quality of the environment and is sensitive to the violation of biodiversity.

TEACHING FORMS AND METHODS

Lectures. Information lecture with multimedia presentation.

Classes. Laboratory exercises with the use of a microscope. Performance of microbiological preparations..

FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES

Lectures. Written test - credit with a grade.

Classes. Class reports, Practical test - assessment of the technique of microbiological work, written test.

BASIC LITERATURE

1) "Microbiology", Rice University, 2014, 2) "Benson's Microbiological Applications", Laboratory Manual in General Microbiology, 2014

ADDITIONAL LITERATURE

2) Fundamentals of Microbiology, School of Distance Education, Bharathiar University, 2008

THE TEACHER/S CONDUCTING THE CLASSES:

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