

Tárgytematika / Course Description

General Microbiology

MENB_ÉTTA001

Tárgyfelelős neve /

Teacher's name: dr. Varga László

Félév / Semester: 2022/23/1

Beszámolási forma /

Assesment: Vizsga

Tárgy heti óraszám /

Teaching hours(week): 2/2/0

Tárgy féléves óraszám /

Teaching hours(sem.): 0/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

Objectives of the course:

This course covers the scope and sequence requirements for a single-semester General Microbiology course for non-majors. The core concepts of microbiology are presented with a focus on applications for careers in agriculture and food processing. The opening lectures present an overview of the discipline, with individual chapters focusing on microscopy and cellular biology as well as each of the classifications of microorganisms. Students then explore the foundations of microbial biochemistry, metabolism, and genetics, topics that provide a basis for understanding the various means by which we can control and combat microbial growth. Upon successful completion of this course, students should be able to: (1) outline the structural and functional differences among all microbes; (2) apply the fundamentals of the chemistry of life to microbial metabolism and physiology; (3) assess the influence of microbes in their natural environments on maintenance of the biosphere; (4) compare and contrast microbial interactions with hosts in health and disease; (5) identify major microbial interactions and illustrate how these interactions affect the well-being of plants and animals; (6) explain the underlying principles of the methods used to control microbial growth; (7) describe the flow and control of genetic information and its influence on the evolution of life on earth; (8) examine the application of microbes to water safety and food production.

TANTÁRGY TARTALMA / DESCRIPTION

Course content:

Week 1: An invisible world (and how we see it)

Week 2: The cell

Week 3: Prokaryotic diversity

Week 4: The eukaryotes of microbiology

Week 5: Acellular pathogens

Week 6: Microbial biochemistry

Week 7: Microbial metabolism

Week 8: Microbial growth

Week 9: Control of microbial growth

Week 10: Biochemistry of the genome

Week 11: Mechanisms of microbial genetics

Week 12: Modern applications of microbial genetics

Plus, related practicals

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESMENT'S METHOD

Requirements:

Attendance at more than 70% of the weekly classes is compulsory. Students must sign their name on the class register. No extra sessions will be provided for missed classes. The signature is a prerequisite of the exam. There is no possibility for pre-exam. Type of exam: written and oral test. All topics covered during lectures and practicals will be discussed in the exam. Grading: 1 (fail) to 5 (excellent).

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Required and recommended readings:

Madigan, M.T., Martinko, J.M., Bender, K.S., Buckley, D.H., Stahl, D.A. (2014) Brock Biology of Microorganisms (14th ed.). Benjamin Cummings, San Francisco, CA, USA.

Parker, N., Schneegurt, M., Tu, A.H.T., Forster, B.M. & Lister, P. (2018) Microbiology (OpenStax). Rice University, Huston, TX, USA. (Available free of charge from: <https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/Microbiology-OP.pdf>)