



GENERAL MICROBIOLOGY

Enrollment year	2021/2022
Academic year	2021/2022
Regulations	DM270
Academic discipline	BIO/19 (GENERAL MICROBIOLOGY)
Department	DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE
Course	ENVIRONMENTAL ENGINEERING
Curriculum	Impiantistico
Year of study	1°
Period	1st semester (27/09/2021 - 21/01/2022)
ECTS	6
Lesson hours	45 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	PASCA MARIA ROSALIA (titolare) - 6 ECTS
Prerequisites	The understanding of some topics of the course assumes the knowledge of the basic concepts of general chemistry, which will be recalled during the lessons.
Learning outcomes	The objectives of the course are: 1. Providing the basics of microbiology; 2. Studying the presence of microorganisms in different environments; 3. Application of microorganisms in solving environmental problems as wastewater treatment and bioremediation.
Course contents	Microbiology as basic and applied science. Fields of modern microbiology. Prokaryotic cell: structure and function. Differences between Prokarya and Eukarya. Microbiological techniques. Factors affecting bacterial growth. Energy production by bacteria: fermentation, respiration, photosynthesis. The origin of life. Taxonomy and classification. Archaea. Main bacterial groups. Antibiotics and vaccins. Viruses. The microorganisms in different environments: atmosphere,

hydrosphere, soil and extreme environments. Interactions between microorganisms and other organisms. Genetically modified microorganisms for the environmental biotechnology. Methods in Environmental Microbiology. Environmental problems and applications in environmental protection: biological treatment of sewage, bioremediation of contaminated sites, biofiltration, dumps, production of biofuels.

Teaching methods

Lectures (hours/year): 45
Practical class (hours/year in lecture theatre): 0
Practicals / Workshops (hours/year in lecture theatre): 0

The course is divided into frontal lessons (ppt files available to students using the Kiro UniPV multimedia platform).
In the first lessons, the basic notions of biology will be provided, useful for understanding the topic of the course. Subsequently, the course will address the topics associated with general microbiology. Finally, the applications of microorganisms in bioremediation, wastewater treatment, etc.

Reccomended or required readings

Prescott LM, Harley JP, Klein DA. Microbiologia. 6a edizione. Casa editrice: McGraw-Hill Barbieri P, Bestetti G, Galli E, Zannoni D.
Microbiologia ambientale ed elementi di ecologia microbica. 1° edizione. Casa Editrice Ambrosiana.

ppt files available to students using the Kiro UniPV multimedia platform.

Assessment methods

The oral examination is divided into two parts:
1. Oral presentation of about 15 minutes by projection of slides on one of the topics of the course.
2. The second part of the oral exam will focus on the rest of the topics of the course, to assess the overall knowledge of the subject by the students.

Further information

To have further information, please contact the teacher by e-mail (mariarosalia.pasca@unipv.it) to make an appointment.

Sustainable development goals - Agenda 2030