UNIVERSITÀ DI PAVIA

Anno Accademico 2020/2021

MICROBIOLOGY

Enrollment year	2020/2021
Academic year	2020/2021
Regulations	DM270
Department	DEPARTMENT OF MOLECULAR MEDICINE
Course	BIOMEDICAL LABORATORY TECHNIQUES
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	2nd semester (01/03/2021 - 18/06/2021)
ECTS	6
Language	Italian

The activity is split

503637 - **CELLULAR BIOLOGY**

503639 - **MICROBIOLOGICAL TECHNIQUES**

503638 - **MICROBIOLOGY 1**

UNIVERSITÀ DI PAVIA

Anno Accademico 2020/2021

CELLULAR BIOLOGY	
Enrollment year	2020/2021
Academic year	2020/2021
Regulations	DM270
Academic discipline	BIO/13 (APPLIED BIOLOGY)
Department	DEPARTMENT OF MOLECULAR MEDICINE
Course	BIOMEDICAL LABORATORY TECHNIQUES
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	(01/03/2021 - 18/06/2021)
ECTS	2
Lesson hours	16 lesson hours
Language	Italian
Activity type	WRITTEN TEST
Teacher	INVERNIZZI ROSANGELA - 2 ECTS
Prerequisites	Student should have already attended the frontal lectures.
Learning outcomes	The aim of the course is to provide students with basic knowledge on the mechanisms of the main cellular functions and, in particular, on the morphological aspects of the cells of the hematopoietic system. At the end of the course the students will be able to recognize the circulating blood cells under the microscope and to perform the differential count.
Course contents	Apoptosis: mechanisms of regulation and methods of study Cell Division: mechanisms of regulation Cytokinetics Cellular communications Signal transduction Normal hematopoiesis and hematopoietic growth factors Stem cells Erythropoiesis: mechanisms of regulation

	RBC morphology Hemoglobin Iron metabolism Methods of iron status study Granulopoiesis Granulocyte functionality Megakaryopoiesis Platelet functions Plasma coagulation factors Steps of the coagulation process
Teaching methods	Lectures
Reccomended or required readings	Chieffi G, Dolfini S, Malcovati M, Pierantoni R, Tenchini ML. Biologia e Genetica, EdiSES
Assessment methods	Written examination
Further information	/
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile

Anno Accademico 2020/2021

MICROBIOLOGICAL TECHNIQUES	
Enrollment year	2020/2021
Academic year	2020/2021
Regulations	DM270
Academic discipline	MED/07 (MICROBIOLOGY AND CLINICAL MICROBIOLOGY)
Department	DEPARTMENT OF MOLECULAR MEDICINE
Course	BIOMEDICAL LABORATORY TECHNIQUES
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	(01/03/2021 - 18/06/2021)
ECTS	2
Lesson hours	16 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	SPALLA MELISSA - 2 ECTS
Prerequisites	-
Learning outcomes	The aim of the course is to provide the student with the essential knowledge to understand the principles and methods of execution of the main methodologies for laboratory diagnosis of infections. In particular, the course aims to: - provide adequate knowledge on the proper management of the biological sample; - provide adequate specific knowledge of methods for evaluation of correct antibiotic susceptibility ; - provide adequate knowledge on the main methods of identification and bacterial typing. At the end of the course the student is expected to have achieved the necessary knowledge to apply a correct and effective diagnostic process.

Course contents	- Sampling of clinical specimens (from various anatomical districts) for microbiological analysis and their proper conservation - The microbiological sample: processing priority, acceptability. - Baterial count. - Direct and indirect diagnostic tools by using microscopy, coltural with manual / automated systems. Molecular methods, i.e. PCR (gene amplification) and immunology. - Innovations in the field of bacterial identification: automated systems, mass spectrometry, molecular methods. - In vitro antimicrobial activity evaluation (antibiogram, MIC, and MBC). Synergy test, combined test, and commercial methods for diagnostic confirmation of ESBL and / or carbapenemases production. Colistin resistance. - Multi-resistance concept, extended resistance, pan-resistance. - Characterization of bacterial isolates and their storage in the laboratory. - Nosocomial infections and epidemic events (definitions): phenotypic and genotypic typing methods.
Teaching methods	The topics concerning the contents of the course will be illustrated and discussed through frontal teaching.
Reccomended or required readings	Didactic material provided by the teacher; Text:"Microbiologia clinica. Con Contenuto digitale (fornito elettronicamente)" by Eudes Lanciotti. Publisher: CEA, fourth edition, 2017. or text: "Microbiologia clinica. Per i corsi di laurea in medicina e chirurgia e in professioni sanitarie" author Roberto Cevenini; Publisher Piccin-Nuova Libraria
Assessment methods	Oral examination
Further information	-
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile

UNIVERSITÀ DI PAVIA

Anno Accademico 2020/2021

MICROBIOLOGY 1	
Enrollment year	2020/2021
Academic year	2020/2021
Regulations	DM270
Academic discipline	MED/07 (MICROBIOLOGY AND CLINICAL MICROBIOLOGY)
Department	DEPARTMENT OF MOLECULAR MEDICINE
Course	BIOMEDICAL LABORATORY TECHNIQUES
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	(01/03/2021 - 18/06/2021)
ECTS	2
Lesson hours	16 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	MIGLIAVACCA ROBERTA (titolare) - 2 ECTS
Prerequisites	-
Learning outcomes	The course aims at obtaining basic microbiological knowledge (morphology, growth ability, isolation site), both for opportunistic pathogenic bacteria and for pathogenic pathogens. The main microorganisms of clinical interest and involved in the development of nosocomial infections will be treated. The student will acquire the tools to assess the importance of the pathogen in relation to the guest.
Course contents	Epidemiological aspects of infectious diseases. The bacterial cell, basic components and accessory components (bacterial sporulation). Methods of sterilization and disinfection. Normal bacterial flora. Host-parasitic interaction and pathogenesis of infectious diseases.

	Antibiotic and Antibiotic Resistance Mechanism: In vitro antimicrobial activity evaluation (antibiogram, MIC, MBC). Methods of clinical specimens sampling, for microbiological analysis and their proper conservation. Direct and indirect diagnostic tools: microscopic, coltural; diagnostic by manual / automated and molecular systems (gene amplification, mass spectrometry), serology. General characters of bacteria of medical interest, with particular attention to staphylococci, streptococci and enterobacteria. SPECIAL MICROBIOLOGY Enterobacteria, Staphylococci, Streptococci, Pseudomonas spp., Acinetobacter spp. And Legionella spp. • general characteristics • pathogenic action • clinical manifestations • laboratory diagnosis: methods useful for identification
Teaching methods	Frontal teaching
Reccomended or required readings	"Clinical Microbiology" - for graduate courses in medicine and surgery and in health professions. Roberto Cevenini Piccin
Assessment methods	Oral examination
Further information	
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile