



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Biomedicina, Neuroscienze e Diagnostica avanzata		
ACADEMIC YEAR	2020/2021		
BACHELOR'S DEGREE (BSC)	BIOMEDICAL LABORATORY TECHNIQUES		
INTEGRATED COURSE	MICROBIOLOGY AND CLINICAL PARASITOLOGY - INTEGRATED COURSE		
CODE	19314		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	MED/07		
HEAD PROFESSOR(S)	FERRARO DONATELLA	Professore Associato	Univ. di PALERMO
OTHER PROFESSOR(S)	CALA' CINZIA	Ricercatore	Univ. di PALERMO
	FERRARO DONATELLA	Professore Associato	Univ. di PALERMO
CREDITS	9		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	2		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	<p>CALA' CINZIA Tuesday 15:00 18:00 Dipartimento Promozione della Salute, Materno-Infantile, di Medicina Interna e Specialistica di Eccellenza "G. D'Alessandro" via del vespro n 133 secondo piano</p> <p>FERRARO DONATELLA Tuesday 13:00 14:00 Dipartimento Promozione della salute, Materno Infantile, di Medicina Interna e Specialistica di Eccellenza "G D'Alessandro", Via del Vespro 133, Piano 2°</p> <p>Thursday 13:00 14:00 Dipartimento Promozione della salute, Materno Infantile, di Medicina Interna e Specialistica di Eccellenza "G D'Alessandro", Via del Vespro 133, Piano 2°</p>		

DOCENTE: Prof.ssa DONATELLA FERRARO

PREREQUISITES	The student must have a good knowledge of Biochemistry and Biology
LEARNING OUTCOMES	<p>Knowledge and understanding: the student should have acquired knowledge and skills understanding of the structural and biological characteristics of microorganisms, the major interactions between microorganisms and host with particular reference to the study of pathogens.</p> <p>Ability to apply knowledge and understanding: the student should demonstrate that they have understood the relationships between microorganisms and the host, the major pathogenic mechanisms by which they cause morbid manifestations.</p> <p>Autonomous judgement The student will have to be able to evaluate the appropriateness of choosing the techniques used to provide the correct interpretation of the microbiological investigations and be able to independently research the most current procedures and protocols for solving a diagnostic question.</p> <p>Communication skills: the student should acquire the ability to clearly transmit the knowledge acquired both in verbal form that media.</p> <p>Learning skills: the student should develop the learning skills that enable it to continue to study independently by consulting the scientific publications in the field and the analysis of specific topics during interactive meetings.</p>
ASSESSMENT METHODS	<p>Oral exam. The candidate will have to answer at least two questions for each of the microbiology main topics (bacteriology, virology, micology, parasitology), with reference to the recommended texts and didactic material provided. Final assessment aims to evaluate whether the student has knowledge and understanding of the topics, has acquired the skills to interpret the notions and judge independently. The sufficiency threshold will be reached if the student shows knowledge and understanding of the issues at least in broad outline, and has application skills sufficient for the identification of pathogens; he must also have presentation and argumentative skills allowing the transmission of his knowledge to the examiner. Below this threshold, the examination will be insufficient. The more the candidate will be able to interact with the examiner with his argumentative and presentation skills, and the more his knowledge and application capabilities will go into detail on the subjects under evaluation, the more the judgement will be positive.</p> <p>The evaluation is expressed using a 30-point scale. ECTS grades: A – A+ Excellent (30-30 cum laude) - Grade descriptors : Excellent knowledge of teaching contents; students should show high analytical and synthetic capabilities and should be able to apply their knowledge to solve highly complex problems. ECTS grade : B Very good (27-29) - Grade descriptors: Good knowledge of the teaching contents and excellent language control; students should show analytical and synthetic skills and be able to apply their knowledge to solve problems of medium and, in some cases, even higher complexity. ECTS grade: C Good (24-26)- Grade descriptors: Good knowledge of teaching contents and good language control; the students should be able to apply their knowledge to solve problems of medium complexity ECTS grade: D Satisfactory (21-23)- Grade descriptors: Average knowledge of the teaching contents, in some cases limited to the main topic; acceptable ability to use the specific discipline language and independently apply the acquired knowledge. ECTS grade: E Sufficient (18-20) - Grade descriptors: Minimum teaching content knowledge, often limited to the main topic; modest ability to use the subject specific language and independently apply the acquired knowledge. ECTS grade: F Fail (1-17) - Grade descriptors: Lack of an acceptable knowledge of the main teaching content knowledge; very little or no ability to use the specific subject language and apply independently the acquired knowledge. Exam failed.</p>
TEACHING METHODS	Lectures

**MODULE
MICROBIOLOGY AND CLINICAL PARASITOLOGY**

Prof.ssa CINZIA CALA'

SUGGESTED BIBLIOGRAPHY

De Grazia S., Ferraro D., Giammanco G. - Microbiologia e Microbiologia Clinica per le professioni sanitarie e per odontoiatria- Casa Editrice Pearson Cancrini G. - Parassitologia e tecniche di laboratorio per le professioni sanitarie - Casa Editrice Edi-Lombardo M. La Placa – Principi di Microbiologia Medica, 13° edizione – 2012-Casa Editrice Esculapio

AMBIT	10341-Scienze e tecniche di laboratorio biomedico
INDIVIDUAL STUDY (Hrs)	90
COURSE ACTIVITY (Hrs)	60

EDUCATIONAL OBJECTIVES OF THE MODULE

Objective of the module is to acquire the basic biological knowledge of bacteria , viruses , parasites and fungi of medical interest and provide students with the general notions necessary for the definition of morphological , structural , biochemical and pathogenic features of individual microorganisms as a basis for their taxonomic classification and for understanding of the principles and for the purpose of identification techniques to differentiate and for a correct diagnosis in clinical microbiology laboratory

SYLLABUS

Hrs	Frontal teaching
3	The prokaryotic cell. Morphology and structure of the bacterial cell . Cytoplasmic membrane (mechanisms of transport of the solutes) . Cell wall (structure and function) . Accessory structures (capsule , fimbriae , flagella , granules , spores)
3	Bacterial genome . The plasmids . Variability of the microbial population. Molecular microbiology (peptidonucleic PNA acids, small RNA sRNA, engineered bacteria, "persisters" bacteria)
3	Bacterial metabolism . Factors affecting microbial growth (nutritional and physical) . Aspects of bacterial growth . Playback. Growth Survey
3	Bacterial Pathogenesis . Pathogenicity factors (structural , metabolic) enzymes and toxins
3	Antibiotics and chemiaterapics. Microbiological bases of antibiotic resistance. Strategic alternative to antibiotics
21	Classification and taxonomic classification of the main pathogenic bacteria to humans through morphological characteristics , dyeing , metabolic , genetic and pathogenic . Staphylococcus , Streptococcus , Chlamydia and Mycoplasma , Neisseria and Haemophilus , Enterobacteriaceae , Mycobacterium, Spirochaetes, Legionella
6	Structure of the fungal cell. Structural organization of fungi (yeasts and molds) . Reproduction of fungi (Sexual and asexual) and related mechanisms . fungal metabolism. Factors conditioning growth mceti
6	Pathogenic factors of fungi . Classification of fungal species responsible for the main human mycoses. Aspergillus , Candida , Cryptococcus neoformans, Dermatophytes
12	General characteristics of protozoa and helminths. Giardia , Trichomonas ; Leishmania ; Entamoeba ; Free-living amoebae ; Toxoplasma ; Plasmodia ; Cryptosporidium

**MODULE
SPECIAL VIROLOGY**

Prof.ssa DONATELLA FERRARO

SUGGESTED BIBLIOGRAPHY

De Grazia S, Ferraro D. Giammanco G. – Microbiologia e Microbiologia clinica per le professioni sanitarie e per Odontoiatria - Seconda edizione - Pearson

AMBIT	10341-Scienze e tecniche di laboratorio biomedico
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INDIVIDUAL STUDY (Hrs)	45
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COURSE ACTIVITY (Hrs)	30
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EDUCATIONAL OBJECTIVES OF THE MODULE

To acquire biological and pathogenetic characteristics of viruses that play a role in human disease.

To Know the methods for cultivating and identifying viruses.

To Know the relationship between viruses and host, the path of transmission and the principal pathological pictures

To Know the mechanism of action of antiviral drugs in order to know the methods for drug resistance assessment.

Acquire basic laboratory-based information useful for virus recognition and the methodology for diagnosis of viral infections

SYLLABUS

Hrs	Frontal teaching
4	History of virology. Biological characteristics and multiplicative cycle of viruses and Mechanism of action of the main antiviral molecules
5	Virus cultivation methods. Identification and titration methods
3	Virus-cell relationship. Virus-host relationship
2	Virological Diagnosys
4	Agenti virali di infezioni localizzate (Influenzavirus, Papillomavirus, Rotavirus) e approcci diagnostici
2	Viral agents of acute systemic infections (Measles, Mumps, Hepatitis A Virus) and diagnostic approaches
10	Viral agents of persistent infections (Herpesvirus, Hepatitis B and C Virus, HIV) and diagnostic approaches