



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Biomedicina, Neuroscienze e Diagnostica avanzata		
<b>ACADEMIC YEAR</b>	2019/2020		
<b>BACHELOR'S DEGREE (BSC)</b>	BIOMEDICAL LABORATORY TECHNIQUES		
<b>INTEGRATED COURSE</b>	MICROBIOLOGY AND CLINICAL PARASITOLOGY - INTEGRATED COURSE		
<b>CODE</b>	19314		
<b>MODULES</b>	Yes		
<b>NUMBER OF MODULES</b>	2		
<b>SCIENTIFIC SECTOR(S)</b>	MED/07		
<b>HEAD PROFESSOR(S)</b>	FERRARO DONATELLA	Professore Associato	Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	CALA' CINZIA	Ricercatore	Univ. di PALERMO
	FERRARO DONATELLA	Professore Associato	Univ. di PALERMO
<b>CREDITS</b>	9		
<b>PROPAEDEUTICAL SUBJECTS</b>			
<b>MUTUALIZATION</b>			
<b>YEAR</b>	2		
<b>TERM (SEMESTER)</b>	1° semester		
<b>ATTENDANCE</b>	Mandatory		
<b>EVALUATION</b>	Out of 30		
<b>TEACHER OFFICE HOURS</b>	<p><b>CALA' CINZIA</b>            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><b>FERRARO DONATELLA</b>            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

<b>PREREQUISITES</b>	The student must have a good knowledge of biology and genetics
<b>LEARNING OUTCOMES</b>	<p>Knowledge and understanding: by the end of this course, students should have acquired knowledge of the structural and biological characteristics of microorganisms, of the interactions between microorganisms and host, and the characteristics of the main infectious diseases.</p> <p>Ability to apply knowledge and understanding: students should be able to apply their knowledge to the main topics of microbial infections, choose and use the study approaches of microorganisms and to choose and use appropriate approaches to individual problems in the field of diagnosis of infectious disease, monitoring the effectiveness of therapy, identifying its advantages and limitations.</p> <p>Autonomous judgement: students should be able to indicate the choices useful for the resolution of problems of microbial infections, through the critical analysis of the data available in the international literature and the analysis of specific cases of microbiological diagnosis</p> <p>Communication skills: students should be able to clearly present works they have carried out individually or in groups.</p> <p>Learning skills: students should be able to find pertinent data for professional update and training and be prepared for subsequent study levels (specialisation degree, Master courses etc.).</p>
<b>ASSESSMENT METHODS</b>	<p>Oral exam with evaluation in thirtieths. The examiner will have to answer at least four oral questions, at least two for each module, which focus on different parts of the program, with reference to the recommended texts. Final assessment aims to evaluate whether the student has knowledge and understanding of the topics, has acquired interpretative competence and autonomy of judgment. The sufficiency threshold will be reached if the student shows knowledge and understanding of the issues at least in broad outline, and have 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 expository and argumentative capacities to allow the transmission of his knowledge to the examiner. Below this threshold, the examination will result insufficient. How much more, however, the examining with his abilities argumentative and expositive will be able to interact with the examiner, and how much more 'his knowledge and skills' applications will go in detail of the microbiology, the more the evaluation will be positive. The threshold of sufficiency will be reached when the student shows</p> <p>knowledge and understanding of the topics at least in general lines and have sufficient applicative skills for solving simple microbiology cases, it must also possess exhibition and argumentative capacities to allow the transmission of his knowledge to the examiner.</p> <p>Below this threshold, the examination will be insufficient.</p> <p>The more, however, the examining with his argumentative skills and exhibit will be able to interact with the examiner, and how much more than his knowledge and application skills will go into microbiology details</p> <p>object of verification, the more the evaluation will be positive. Evaluation and its criteria: The evaluation is in thirtieths, as shown in the following diagram:</p> <p>- 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>
<b>TEACHING METHODS</b>	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

<b>AMBIT</b>	10341-Scienze e tecniche di laboratorio biomedico
<b>INDIVIDUAL STUDY (Hrs)</b>	90
<b>COURSE ACTIVITY (Hrs)</b>	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**

<b>Hrs</b>	<b>Frontal teaching</b>
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 ( transformation, transduction , lysogenic conversion , conjugation, transposition , mutations )
3	Molecular microbiology (peptidonucleic PNA acids, small RNA sRNA, engineered bacteria, "persisters" bacteria)
3	Bacterial metabolism . Factors affecting microbial growth ( nutritional and physical ) . Metabolic pathways . Biosynthesis of the peptidoglycan and spores
3	Aspects of bacterial growth . Playback. Growth Survey
3	Bacterial Pathogenesis . Pathogenicity factors (structural , metabolic ) enzymes and toxins
6	Antibiotics and chemioterapics. Microbiological bases of antibiotic resistance. Strategic alternative to antibiotics
15	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 , Legionella
3	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 mceci
3	Pathogenic factors of fungi . Classification of fungal species responsible for the main human mycoses. Aspergillus , Candida , Cryptococcus neoformans
3	General characteristics of the virus . Morphology, structure of viruses . Replicative cycle and genetic variability.
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 Odontoiatria- 2° Edizione- Pearson

<b>AMBIT</b>	10341-Scienze e tecniche di laboratorio biomedico
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<b>INDIVIDUAL STUDY (Hrs)</b>	45
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<b>COURSE ACTIVITY (Hrs)</b>	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**

<b>Hrs</b>	<b>Frontal teaching</b>
2	Presentation of the transparency form. History of Virology. Morphology and structure of viruses and Biological characteristics
3	Principles of the taxonomic classification of animal viruses. Virus multiplication cycle: adsorption and penetration. Virus cultivation methods
3	Virus multiplication cycle: macromolecular synthesis of deoxyriboviruses and riboviruses, Assembly and release from the cell Virus cultivation methods
2	Virus-cell interaction
5	Pathogenesis of viral infections
2	Virological diagnosis
3	Viruses causing local infections (Rotavirus, Influenzavirus, Papillomavirus) and diagnostic approaches
4	Viruses causing systemic infections (Measle, Influenza virus, Papillomavirus) and diagnostic approaches
6	Viruses causing local infections (Rotavirus, Influenzavirus, Papillomavirus) and diagnostic approaches