



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Biomedicina, Neuroscienze e Diagnostica avanzata
ACADEMIC YEAR	2018/2019
MASTER'S DEGREE (MSC)	MEDICAL BIOTECHNOLOGIESD AND MOLECULAR MEDICINE
SUBJECT	CLINICAL MICROBIOLOGY
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50644-Discipline biotecnologiche comuni
CODE	16157
SCIENTIFIC SECTOR(S)	MED/07
HEAD PROFESSOR(S)	FERRARO DONATELLA Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	102
COURSE ACTIVITY (Hrs)	48
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	1° semester
ATTENDANCE	Mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	<p>FERRARO DONATELLA</p> <p>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	Knowledges about the main biotechnologic diagnostic methods useful in microbiology.
LEARNING OUTCOMES	<p>Knowledge and understanding: The student should acquire the knowledge of the main methods useful for microbiological diagnosis.</p> <p>Acquire the skills necessary to address and resolve questions of microbiological diagnosis, and critically evaluate the significance of the data obtained in relation to the human disease. Knowledge of the methodologies to study the genetic variability of microorganisms and understand their relationships with human infectious diseases. Knowledge of biotechnological molecular, cellular and bio-computational methods to participate in the planning and implementation of biotechnological applications in diagnosis of microbial infections.</p> <p>Ability to apply knowledge and understanding: acquire the knowledge and ability to apply the available methods for a correct etiological diagnosis and for the study of microorganism's genetic variability, understanding the relationships between microorganism and the host involved in the infectious diseases.</p> <p>Autonomous judgement: the student should be able to formulate personal judgments to solve analytical problems and made critical analyses about the topics studied. They should be able to value and solve problems within microbiology diagnoses. International literature data should be used to improve their capability of interpretation of the results achieved.</p> <p>Communication skills: the student should be able to clearly communicate the results of laboratory tests and provide a critical interpretation</p> <p>Learning skills: the student should be able to collect, organize and interpret correctly the data available in literature.</p>
ASSESSMENT METHODS	<p>Oral exam with evaluation expressed using a 30-point scale. The candidate will have to answer orally at least two questions inherent different parts of the program, in relation to the information acquired by the texts recommended and teaching tools supplied.</p> <p>Final assessment aims to evaluate whether the student has acquired knowledge and skills for a correct diagnostic approach, for the interpretation of the microbiological test and for the molecular characterization of microorganisms. The student will reach a threshold of sufficiency if his capability of knowledge, understanding and skills will be enough to solve simple concrete cases inherent to the focus of the course. He has also to acquire language properties to transfer his knowledge to the examiner. The student will fail the examination if he is not able to satisfy those requisites.</p> <p>The candidate will be evaluate according to his capability to argue and relate his knowledge and according to his practical skills. The vote will be proportional to his overall skill.</p> <p>ECTS grade; Italian Grade; Grade descriptors</p> <p>A – A+ Excellent; 30-30 cum laude Eccellente; 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.</p> <p>B Very good; 27-29 Ottimo; Very 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.</p> <p>C Good; 24- 26 Buono; Good knowledge of teaching contents and good language control; the students should be able to apply their knowledge to solve problems of medium complexity</p> <p>D Satisfactory; 21-23 Discreto; 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.</p> <p>E Sufficient; 18-20 Sufficiente; Minimum teaching content knowledge, often limited to the main topic; modest ability to use the subject specific language and independently apply the acquired knowledge.</p> <p>F Fail; Insufficiente; 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.</p>
EDUCATIONAL OBJECTIVES	<p>The student should acquire:</p> <p>The theoretical and practical skills that will enable him to use biotechnology to address microbiological diagnosis and to critically evaluate the significance of the data obtained in relation to the diagnostic request;</p> <p>The ability to apply the methods available, to study the genetic variability of microorganisms and understand their impact on human infectious diseases;</p> <p>The appropriate technical knowledge to perform the molecular biotechnology methods, cellular and bio-computing, in order to be able to participate in the planning and implementation of biotechnological applications in microbiological diagnosis.</p>
TEACHING METHODS	Lectures; laboratory activities, external lecturers seminar held on issues of innovative biotechnology and transversal training.
SUGGESTED BIBLIOGRAPHY	S. De Grazia, D. Ferraro, G. Giammanco "Microbiologia E Microbiologia Clinica per le professioni sanitarie" – Casa Editrice Pearson

Pubblicazioni scientifiche inerenti la microbiologia; International literature
 Materiale didattico utilizzato durante le lezioni; Didactic material provided during lessons

SYLLABUS

Hrs	Frontal teaching
4	Biological characteristics of microorganisms of medical interest (bacteria, fungi and virus)
4	Pathogenetic mechanisms of bacteria and fungi
2	Virus-cell and virus-host interactions
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2	Principles of diagnosis of microbial infections
4	Antimicrobial agents and resistance mechanisms. Evaluation of drugs antimicrobial activity
2	Microbiome
2	Pathogenesis and diagnosis of Mycobacterium tuberculosis infection
2	Pathogenesis and diagnosis of Hepatitis B virus (HBV) infection
2	Pathogenesis and diagnosis of Hepatitis C virus (HCV) infection
2	Pathogenesis and diagnosis of HIV infection
2	Pathogenesis and diagnosis of meningoencephalitis
2	Study of viral genetic variability: gastroenteric viruses
Hrs	Practice
16	Theoretical and practical activities about molecular methods (PCR, inverse hybridization and sequencing) useful for the identification of the main pathogenic microorganisms and for the study of the genetic variability of viruses.