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	DIAGNOSTIC AND THERAPEUTIC BIOTECHNOLOGIES IN MEDICAL ONCOLOGY
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50637-Discipline medico-chirurgiche e riproduzione umana
CODE	19369
SCIENTIFIC SECTOR(S)	MED/06
HEAD PROFESSOR(S)	RUSSO ANTONIO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	102
COURSE ACTIVITY (Hrs)	48
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	2° semester
ATTENDANCE	Mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**RUSSO ANTONIO** Thursday 12:00 14:00 Policlinico P. Giaccone Palermo - Via del Vespro 129 - UOC Oncologia Medica - Piano terra - Prof. Antonio Russo

DOCENTE: Prof. ANTONIO RUSSO

PREREQUISITES	Basic Concepts of Molecular Biology
LEARNING OUTCOMES	Knowledge and understanding: After the course, the student will have acquired the knowledge of methodologies and tools to: define the main applications of biotechnology to clinical practice in medical oncology, with particular reference to the molecular characterization of sporadic and hereditary cancers and the search for predictive factors and surrogate biomarkers as response to therapy; know the lab biotechnology applied in oncology and hematology; plan strategies for the identification of mutations in known genes or candidates in oncology and hematology; know the molecular diagnostic procedures and cell and gene therapies in oncology and hematology; Apply knowledge and understanding: ability to apply the knowledge acquired during the activities of training in research laboratories or clinical studies, know how to apply the new biological and molecular genetic strategies for advanced molecular diagnostics and to be useful for medical support in the implementation of new therapeutic protocols and clinical management of cancers, know how to apply the methods of molecular biology in monitoring the treatment of haematological cancers and diseases in the new biological and molecular genetic strategies for cell and gene therapy in oncology and hematology. Making judgments: Students will be able to evaluate in a rational and autonomous basic knowledge and will be able to address issues related to biotechnology applying a scientific approach. The course provides the tools to analyase, interpret and be able to know how to comment critically the results of studies on new technologies applied in oncology. Communication skills: ability to communicate and explain, in a simple, yet rigorous way, the knowledge gained as well as ability to interface with colleagues and professors. Learning skills: Ability to do an upgrade through the consultation of scientific publications related to biotechnology applied to research topics and advanced diagnostics in oncology. Ability to use the knowledge gained in courses and specialised seminars.
ASSESSMENT METHODS	Oral exam, maximum Italian Grade 30 -30 cum laude: 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. 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 . 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 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. 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. 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. http://www.unipa.it/scuole/dimedicinaechirurgia/.content/documenti/Tabella-Valutazione-Inglese.pdf
EDUCATIONAL OBJECTIVES	The course aims to define the main applications of biotechnology in clinical practice in oncology and oncoematology. The goal is also to provide students with the tools to understand the importance of molecular biology in the molecular characterization of solid and haematological malignancies, highlighting the important implications of this approach in clinical (target therapies).
TEACHING METHODS	Frontal lessons Laboratory exercises Seminars Among the laboratory activities a seminar is planned, it will be held by external lecturers on issues of innovative biotechnology and cross training
SUGGESTED BIBLIOGRAPHY	Articoli e reviews a diffusione internazionale consigliati dal docente. Materiale powerpoint fornito dal docente inerenti gli argomenti trattati

SYLLABUS

Hrs	Frontal teaching
3	molecular diagnosis and clinical management of hereditary breast and / or ovarian cancers
4	molecular diagnosis and clinical management of hereditary colorectal cancers and Responsive predictive factors to targeted therapies in colorectal carcinomas
2	molecular diagnosis and clinical management of gastrointestinal stromal tumors
3	Responsive predictive factors to targeted therapies in lung cancers
2	predictive biomarkers and surrogate endpoints to targeted therapies in kidney tumors
2	molecular diagnosis and clinical management of melanomas
2	molecular diagnosis and clinical management of pancreas, stomach and thyroid
2	Development of new technologies for personalised cancer treatment
2	Application of biotechnology in clinical development of cancer drugs
2	Molecular diagnosis and clinical manegment of onco-hematological malignancies (1)
2	Molecular diagnosis and clinical manegment of onco-hematological malignancies (2)
6	Clinical application of new methods for the identification of molecular targets (“Whole genome”, “Whole exome”, “Whole transcriptome”, “Gene expression profiling” , “copy number variations”) in solid tumors

Hrs	Workshops
4	Nucleic acid isolation (DNA, RNA, ctDNA, microRNA)
4	PCR applications: Real Time PCR, sequencing
4	Next Generation Sequencing
4	Digital PCR