UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze e Tecnologie Biologiche, Chimiche e Farmaceutiche
ACADEMIC YEAR	2019/2020
MASTER'S DEGREE (MSC)	MOLECULAR AND HEALTH BIOLOGY
SUBJECT	MOLECULAR GENETICS
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50507-Discipline del settore biomolecolare
CODE	94412
SCIENTIFIC SECTOR(S)	BIO/18
HEAD PROFESSOR(S)	LENTINI LAURA Professore Associato 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	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**LENTINI LAURA** Thursday 15:00 17:00 Sede del Consorzio Universitario, corso Vittorio Emanuele, 92, 93100 Caltanissetta Friday 11:00 13:00 Studio docente e Aula Microsoft Teams Dip. STEBICEF, viale delle Scienze, Ed.16 , piano -1.

PREREQUISITES	Basic Genetics
LEARNING OUTCOMES	Knowledge and understanding: acquisition of terminologies and methodological elements at the base of molecular genetic approaches for the subsequent understanding of cellular pathways under genetic control. Ability to apply knowledge and understanding: to be able to understand the "rationale" of molecular genetics experiments. Ability to collect, interpret and process, scientific data derived from the study of scientific papers that use their own methods of molecular genetics. Problem solving abilities. Making judgments: to be able to integrate knowledge of the experimental data and synthesis presented in scientific papers. Communication skills: to be able to work in a team, ability to present scientific arguments and their conclusion orally and in writing to specialist and nonspecialist audiences. Learning skills: ability to learn autonomously the technical and methodological approach in molecular genetic research by making use of their knowledge or of scientific sources.
ASSESSMENT METHODS	The evaluation will be made by a final oral exam, intermediate quiz and group seminars. The final will be comprehensive and will cover material from the entire course. The assessment will take into account the level of knowledge of the topics treated during the course and skills reasoning demonstrated during the examination. In detail: Insufficient- the student does not possess the basic knowledge of Genetics' topics. 18-21- limited knowledge of basic subjects associated with fragmentary and incomplete exposure. 22-25- mastery of only basic issues associated with discrete scientific language abilities. 26-29- more than good grasp of the topics covered in the course, full of scientific language 30-30 cum laude- excellent mastery and ability to present the arguments demonstrating excellent reasoning skills, good mastery of scientific language.
EDUCATIONAL OBJECTIVES	The modules will focus on recent advances in Genomics and cancer molecular genetics. Specifically they will be addressed genetic factors with respect to altered genes and cellular pathways that control correct cell proliferation. Reading material is taken from the primary literature.
TEACHING METHODS	Frontal lessons
SUGGESTED BIBLIOGRAPHY	Tom Strachan& Andrew Read: Genetica molecolare umana, Zanchelli 2012. Durante il corso vengono forniti agli studenti i necessari strumenti per lo studio della disciplina; in particolare vengono fornite dal docente le presentazioni in Power Point, files multimediali e articoli scientifici pdf.

SYLLABUS

Hrs	Frontal teaching
4	Analysis of the structure of genes, chromosomes and genomes. Gene function in the postgenomic Era.
10	Genetics in the post-genomic Era: Structural, comparative and functional genomics (transcriptome and proteome). -Two channels microarray and gene-chips for genomic analysis. Interpretation of microarray data. CGH array. -Organization of the human genome: gene structure, genomic polymorphisms: SNPs, RFLP, VNTR, STRs. Haplotype. -Pharmacogenomics.
4	The cell cycle regulation and analysis of the cell cycle checkpoints. Role of pRB and TP53 tumor suppressors in genomic instability. Viral oncoproteins of DNA viruses (E6-E7; EIA-E1B; LargeTag) their cellular targets and checkpoints.
2	The ATM gene, CHK1 CHK2 effectors and their function in the cell cycle checkpoints
4	Role of cyclin-dependent kinases inhibitors (CDKIs) p21 and p16. The ARF locus. Relationship between ARF and MDM2. The pathway: E2F1, p14 / 19ARF.
10	Genetics and genomics of cancer: The origin of cancer: mutations in oncogenes (activation) / tumor suppressor genes. -Carcinogenesis and tumor progression models (retinoblastoma, colorectal, head / neck). Cancer stem cells
4	Hippo pathway:LATS1 / 2 genes, the role of the Hippo protein pathway in response to antimitotic drugs (coactivator TAZ) (experiments).
8	Human genetic diseases models: cystic fibrosis, muscular dystrophy, Huntington's chorea. Gene therapy
2	Gene Therapy