DIPARTIMENTO DI SCIENZE

Academic Year: **2016-2017**

Course: **ADVANCED DIAGNOSTIC MEDICAL BIOTECHNOLOGY**

TYPE OF EDUCATIONAL ACTIVITY: **Basic**

Teacher: **Prof. Angela OSTUNI**

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Language: **ITALIAN**

ECTS: **8** (6 of lessons and 2 of tutorials/practice)	n. of hours : **72** (48 of lessons and 24 of tutorials/practice)	Campus: **Potenza** Department: **Sciences** Program: **Biotechnologies for Medical, Pharmaceutical and Veterinary Diagnostics**	Semester: **I** (from 03/10/2016 to 15-31/01/2017

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

To know, be able to design and illustrate with language appropriateness, an experimental protocol in the framework of innovative technologies in the diagnostics field of human health.

PRE-requirements

Students must have acquired the knowledge of topics of Advanced Molecular Biology and Cytogenetic

Syllabus

- ✓ Preparation, qualitative and quantitative analysis of nucleic acids for molecular diagnostics
- ✓ solid-phase chemical synthesis of oligonucleotides and quality controls. Design and purification of gene probes
- ✓ Molecular hybridization: Southern and Northern blotting; Dot-blot; reverse Dot-Blot; in solution hybridization; in situ hybridization, SKY, CGH; preparation of FISH probes.
- ✓ DNA Array: preparation, data processing and applications
- ✓ Tissue Microarray: principles and applications
- ✓ Protein arrays: preparation and applications
- ✓ Analysis of mutations and polymorphisms by PCR, LCR, restriction analysis, ASO-PCR, OLA,ARMS,DGGE, SSCP, DHPLC
- ✓ Molecular analysis in forensic genetics
- ✓ Real-Time PCR: design and optimization of an experiment. Qualitative and quantitative applications: Microorganisms search, determination of viral load, mutations and SNP analysis, GMO search, gene expression analysis.
- ✓ Methods for sequencing: cycle sequencing, APEX, Pyrosequencing, Next generation sequencing
- ✓ Nucleic Acid amplification: NASBA, branched-DNA, LCR
- ✓ Diagnostic technologies based on DNA methylation
- ✓ Prenatal diagnosis

TEACHING METHODS

The course includes 48 hours of lectures and 24 hours of guided lab exercises.

EVALUATION METHODS

The exam consists of an oral test in which it will be evaluated the ability to link and compare different aspects covered during the course.

TEXTBOOKS AND EDUCATIONAL MATERIAL

- ✓ Diagnostica molecolare nella medicina di laboratorio. Balestrieri, D'Amora, Giordano, Napoli, Pavan. Piccin editor
- ✓ Teacher's slides
- ✓ Scientific articles on specific topics

INTERACTION WITH STUDENTS

At the beginning of the course, after describing the objectives, the detailed program and methods of verification, the teacher will indicate the reference texts and the availability of teaching materials. Teacher will collect the list of students, together with name, serial number and email. Teacher will be available for contact with the students,

from 12:00 to 14:00 on Friday at her room by appointment fixed through e-mail .

EXAMINATION SESSIONS
28/02/2017, 26/04/ 2017, 27/06/2017, 26/09/2017, 28/11/2017

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