DIPARTIMENTO DI SCIENZE

Academic Year: **2016-2017**

Course: DIAGNOSTIC MEDICAL BIOTECHNOLOGY

TYPE OF EDUCATIONAL ACTIVITY : **Basic**

Teacher: **Prof. Angela OSTUNI**

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Language: **ITALIAN**

ECTS: **6** (5 of lessons and 1 of tutorials/practice)	n. hours: **52** (40 of lessons and 12 of tutorials/practice)	Campus: **Potenza** Dept:**Dipartimento di Scienze** Program:**BIOTECNOLOGIE (L2)**	Semester: **II** (from 06/03/2017 to 15-30/06/2017)

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Know and be able to use technological systems to be applied in the context of human health

PRE-requirements

Students must have acquired the knowledge of General Pathology and Molecular Biology

Syllabus

- ✓ Production of recombinant proteins in heterologous systems used in the medical field.
- ✓ Transgenic animals and plants for drugs production.
- ✓ Gene therapy
- ✓ Antigens, immunogens, epitopes. Major histocompatibility complex. Inactivated, attenuated, vaccines subunits. Adjuvants. Strategies for developing vaccines without the use of adjuvants. DNA vaccines. Passive immunoprophylaxis.
- ✓ Design of vaccines for HIV and cancer
- ✓ Preparation of polyclonal antibodies and their application
- ✓ Preparation of monoclonal antibodies: hybridoma method; humanization of antibodies; phage display.
- ✓ Monoclonal antibodies in therapy: preparation of immune conjugates (toxins, radionuclides, drugs, enzymes) immune liposomes, immune polimers.
- ✓ Antibodies in diagnostic field: ELISA, western blotting, Immunocytochemistry, immunohistochemistry, immunofluoresce, flow cytometry
- ✓ Cell cultures: technical set-up and maintenance
- ✓ Stem cells: sources, isolation and their use in clinic
- ✓ Cell Therapy
- ✓ Molecular therapy: mechanisms of signal transduction, strategies to block cell surface receptors and ligand, protein kinase inhibitors; inhibitors of the enzyme farnesyltransferase, inhibitors of angiogenesis. Metallo protease inhibitors.
- ✓ Oligonucleotides as molecular probes: the fluorescence in situ hybridization (FISH).
- ✓ Oligonucleotides as therapeutic agents: antisense oligonucleotides, RNA interference.
- ✓ Assisted reproductive technologies.

TEACHING METHODS

The course includes 40 hours of lectures and 12 hours of guided lab exercises.

EVALUATION METHODS

Oral exam on all course topics and critical discussion of the experience in the laboratory. The student must submit a written report on the lab experience one week before the examination date.

TEXTBOOKS AND EDUCATIONAL MATERIAL

- ✓ Metodologie di base per le scienze biomolecolari. RobReed, David Holmes, Jonathan Weyers,Allan Jones. Zanichelli
- ✓ Introduzione alle colture cellulari. Mariottini et al. Morgan Edizioni tecniche
- ✓ Le cellule staminali e la terapia genica. Antonino Sapuppo. Giunti
- ✓ Biologia cellulare e genetica. Parte I (cap.16, 18,21). A. Fantoni et al. Ed. Piccin
- ✓ Fondamenti di immunologia. A.K. Abbas, A.H. Lichtman. Ed Piccin
- ✓ Introduzione alla medicina molecolare. D.W. Ross. Springer ed.

- ✓ Teacher's slides

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

27/06/2017, 26/09/2017, 28/11/2017

SEMINARS BY EXTERNAL EXPERTS SI □ NO x