
COURSE: CYTOGENETICS AND MOLECULAR DIAGNOSTICS

ACADEMIC YEAR: 2019/2020 - I semester**TYPE OF EDUCATIONAL ACTIVITY: Characterizing****TEACHER: Prof. Lioi Maria Brigida**e-mail: maria.lioi@unibas.it

website:

phone: **0971/205016**mobile (optional): **3204371177**Language: **Italian**

ECTS: 8 6 ETCS of lessons and 2 ETCS of laboratory tutorial	n. of hours: 72 48 hours of lessons and 24 hours of of laboratory practice	Campus: Potenza Science Department Program: Biotechnology for medical diagnostic, pharmaceutical and veterinary (LM-9)	Semester: I (Course beginning on 01/10/2018 ending on 20/01/2019)
--	---	--	---

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES**knowledge and understanding**

Basic knowledge and karyotype study methodologies for the analysis of chromosomal and gene mutations related (or not) to diseases; knowledge and application of techniques that involve the automation of diagnostic tests; knowledge of basic principles concerning embryo development and manipulation.

Applying knowledge and understanding

Ability to apply the acquired knowledge for diagnostic analysis.

Judgments

Use of basic skills in order to express a personal judgment for the interpretation of new cases

Communication skills

Ability to express the acquired knowledge with appropriate words making them understandable even for non-experts.

Learning capacity

Individual ability to consult books and scientific literature in order to improve personal knowledge for the study of the discipline.

PRE-REQUIREMENTS

SYLLABUS

HOURS OF LESSONS	TOPIC
6	Organization of genetic material in the chromosomes - Normal and abnormal karyotype - Methods to chromosomes identification .
6	karyotyping applications into medical diagnostics and research
6	Molecular cytogenetics techniques: Polymorphisms - Nucleolus Organizer Regions (NORs) - Sister Chromatid Exchanges (SCEs) - Methods for fragile X-site (X-fragile).
6	Cell Cultures : cultures from solid and/or abortive tissues - Cytogenetic pre- and/or post-natal diagnosis - Synchronized cultures.
6	Tests of mutagenicity - Chromosomal and genomic instability - Chemical and physical mutagens - Relationship between somatic mutation-carcinogenesis-aging.
6	Clinical database for genetic disorders - Cytogenetics and cancer.
6	microscopy and image analysis
6	Embryo manipulation : applications and developments
HOURS OF LABORATORY TUTORIAL	TOPIC
24	cell cultures and slides preparations - Cytogenetic analysis of metaphases

TEACHING METHODS

48 hours of theoretical lessons and 24 hours of laboratory activities consisting in cell cultures preparation and cytogenetic analysis.

EVALUATION METHODS

Oral examination. Final evaluation: Score on 30 points

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

- CITOGENETICA UMANA. Ventruto A., Sasso G., Lonardo F. Ed. Springer. (Textbook).
- CONSULENZA GENETICA PRATICA. P.S. Harper. Ed. Piccin
- HUMAN CYTOGENETICS constitutional analysis (third edition) edited by D.E. Rooney
- MANIPULATING THE MOUSE EMBRYO, A LABORATORY MANUAL. Brigid Hogan , Frank Costantini, Elisabeth Lacy. Edited by Cold Spring Harbor Laboratory

INTERACTION WITH STUDENTS

At the beginning of the course the professor communicates the text books. Additional material will be provided during the course

The professor is available at all times for giving guidance to students by previously e-mail according

EXAMINATION SESSIONS (FORECAST)¹

05/02/19; 05/03/19; 16/04/19; 05/06/19; 03/07/19; 17/09/19; 22/10/19; 03/12/19

SEMINARS BY EXTERNAL EXPERTS YES X NO

FURTHER INFORMATION

¹ Subject to possible changes: check the web site of the Teacher or the Department/School for updates.