DIPARTIMENTO DI SCIENZE

COURSE: **Advanced genetic technologies**			
ACADEMIC YEAR: **2017-2018**			
TYPE OF EDUCATIONAL ACTIVITY:			
TEACHER: Prof. Giuseppe Martelli			
e-mail: giuseppe.martelliòunibas.it		website:	
phone: +39 0971 205550		mobile (optional):	
Language: **Italian**			
ECTS: 8 (6 lessons e tutorials/practice)	n. of hours: 72 (48 lessons and 24 tutorials/practice)	Campus: **Potenza** Dept./School: **Dipartimento di Scienze** Program:	Semester: I Beginning 02/10/2017 until 15-31/01/2018)

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The course aims to study, with the support of practical applications, the theoretical basis of the genetic mechanisms that underlie the identification and development of procedures for the characterization, diagnosis and genetic breeding in plants and animals included man. Particular attention will be paid to the study and characterization of metabolic pathways, on the basis of genomics and transcriptomics, for the production of metabolites of pharmaceutical interest and / or nutraceutical in different organisms.

PRE-REQUIREMENTS

SYLLABUS

Topics :

- Basic genetic concepts
- Biotechnology: aims and applications
- Biological systems used in molecular biotechnology
- Genetic of Population: problems and biotechnological applications
- Evolution and Speciation
- The gene variation: genetic mechanisms that create variability
- The gene regulation: the control of gene expression in eukaryotes systems
- The DNA repair
- Molecular Biotechnology of base DNA and RNA: PCR, real time PCR, NGS, microarray The course aims to study, with the support of practical applications, the theoretical basis of the genetic mechanisms that underlie the identification and development of procedures for the characterization, diagnosis and genetic breeding in plants and animals included man. Particular attention will be paid to the study and characterization of metabolic pathways, on the basis of genomics and transcriptomics, for the production of metabolites of pharmaceutical interest and / or nutraceutical in different organisms.
- Cellular Biotechnology: protoplasts, cell synchronization and Somatic celle Hybridization
- Advanced Genetic Technologies applied to humans
- Advanced genetic technologies applied to the environment
- Advanced genetic technologies for the development of new production chains

Lab topics :

- Bioinformatics applications for the study and characterization of gene
- Lab of advanced genetic technologies direct to the study and characterization of functional genes.
- Lab of advanced genetic technologies for the study and characterization of structural genes.
- Applications of advanced genetic technology on cell manipulation

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TEACHING METHODS

- Lectures and Lab activities

EVALUATION METHODS

- *Oral examination*

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

- Craig et al. - **Biologia molecolare. Principi di funzionamento del genoma -** Pearson
- Weaver R.F. - **Biologia Molecolare**- McGrawn-Hill
- Material provided by the teacher.

INTERACTION WITH STUDENTS

- Receiving time:

Receiving time during the week

	From	To	Place
Monday	9,30	10,30	Office
Tuesday	11,00	13,00	Office
Wednesday			
Thursday			
Friday	11,00	13,30	Office

- *By mail*

EXAMINATION SESSIONS (FORECAST)[1]

Call for examination

Month	Year	Expected call
February	2017	X
March	2017	X
April	2017	
May	2017	
June	2017	X
July	2017	X
September	2017	
October	2017	X
November	2017	X
December	2017	
January	2018	X

Examination Panel:

Presidente: Prof. Giuseppe Martelli
Componente: Dr. Rocco Rossano
Componente: Prof. Giovanni Salzano

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

Componente: Prof. Magnus Ludvig Monnè
Componente: Dr. Angelo Bracalello
Componente: Dr. Vittoria Infantino

SEMINARS BY EXTERNAL EXPERTS YES X NO

FURTHER INFORMATION