

Main course information	
Academic subject	Functional analysis of the genome
Degree course	Cellular and Molecular Biology
Degree class	LM/6
ECTS credits (CFU)	3
Compulsory attendance	Yes
Teaching language	Italian
Accademic Year	2019/2020

Professor/Lecturer	
Name & SURNAME	Mariateresa Volpicella
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Tel.	080-5443311
Tutorial time/day	by appointment to be requested by mail

Course details	Pass-fail exam/Exam with mark out of 30	SSD code	Type of class
	Exam with mark out of 30	BIO/11	Lecture/laboratory

Teaching schedule	Year	Semester
	I	II

Lesson type	CFU/ECTS	Lessons (hours)	CFU/ECTS lab	Lab hours	CFU/ECTS tutorial/workshop	Tutorial/workshop hours	CFU/ECTS field trip	Field trip Hours
		2	16	1	12			

Time management	Total hours	Teaching hours	Self-study hours
	90	28	62

Academic Calendar	First lesson	Final lesson
	March	June

Syllabus	
Course entry requirements	Knowledge of molecular biology, biochemistry, genetics and basic molecular biology techniques
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	
<i>Knowledge and understanding</i>	Acquisition of advanced knowledge of modern molecular biology techniques for nucleic acid analysis and recombinant protein expression
<i>Applying knowledge and understanding</i>	Application of broad-spectrum methodologies related to the biomolecular research field.
<i>Making informed judgements and choices</i>	Acquisition of autonomy in areas related to evaluation, and interpretation of experimental and theoretical data
<i>Communicating knowledge and understanding</i>	Acquisition of the appropriate vocabulary and terminology for the description of the methodological and instrumental approaches used for the functional analysis of the genome and of recombinant proteins, and of their use in the biotechnological field. The achievement of an adequate level of communication skills will be assessed during the lessons, exercises and during the final exam.
<i>Capacities to continue learning</i>	Acquisition of the ability to investigate, update and read with a critical spirit the evolution of the discipline, through the consultation of texts, databases and other information on the net.

Syllabus

Course content	<ul style="list-style-type: none"> • Functional genomics and gene function: general aspects. • Vectors for the expression of recombinant proteins in bacteria, yeasts and mammals • Site-specific and random mutagenesis • Phage display and functional screening • Genome walking for the identification of gene regions • Microbiome and transcriptome analysis by NGS techniques <p>Laboratory experiences:</p> <ul style="list-style-type: none"> • Expression of the Green Fluorescent Protein in transformed bacteria and chromatographic purification of the protein • Transformation of Pichia pastoris yeast cells
Course books/Bibliography	<p>F. Amaldi et al. BIOLOGIA MOLECOLARE 3a edizione - Ed. Zanichelli.</p> <p>T.A. Brown- Genomi 3- EdiSES; Biotecnologie molecolari-Zanichelli</p>
Notes	The study must be integrated with the lecture notes; the PowerPoint of the lessons will also be available as support.
Teaching methods	Frontal lessons with the use of power point and practical experiences in the laboratory.
Assessment methods (indicate at least the type written, oral, other)	Oral exam
Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are)	In addition to ascertaining the acquisition of concepts, it will be evaluate the capacity of respond to the reasons and make connections with a critical and punctual spirit of the topics within the same discipline and in relation to other disciplines related, such as biochemistry and genetics.
Further information	