

General Information	BACELOR DEGREE IN BIOTECHONOLOGIES
Title of the subject	Molecular biology and bioinformatics laboratory
Degree Course (class)	INDUSTRIAL AND AGRO-FOOD BIOTECHNOLOGIES (L-2)
ECTS credits	6
Compulsory attendance	Yes
Language	Italian
Academic year	2020/2021

Subject Teacher		
Name and Surname	Caterina De Virgilio	
email address	Caterina.devirgilio@uniba.it	
Place and time of reception	by appointment to be requested by email or by phone	
ECTS credits details	Discipline sector (SSD)	Area
	BIO/11	---

Study plan schedule	Year of study plan	Semester
	III	I

Time management	Lessons	Laboratory	Exercises	Total
CFU	2	4		6
Total hours	50	100		150
In-class study hours	16	48		64
Out-of-class study hours	34	52		86

Syllabus	
Prerequisites / Requirements	Knowledge of molecular biology, biochemistry and genetics
Expected learning outcomes (according to Dublin descriptors)	
Knowledge and understanding	<i>Acquisition of advanced knowledge of molecular biology and bioinformatics to study the structure and functions of nucleic acids, and to the mechanisms by which information is expressed and transmitted in subsequent generations.</i>
Applying knowledge	Application of broad-spectrum methodologies and Bioinformatics methods related to the biomolecular research field.
Making informed judgments and choices	Acquisition of autonomy in areas related to application, to evaluation, and interpretation of experimental data and to the formulation of strategies for the study of molecular biology.

Communicating knowledge	Acquisition of vocabulary and terminology related to molecular biology and bioinformatics in order to understand any further information through a specific bibliography.
Capacities to continue learning	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.
Study Program	
Content	<p>Basic techniques for DNA manipulation: Extraction and purification of nucleic acids PCR Restriction enzymes Electrophoresis Marking and hybridization Preparation of the cDNA: retro-transcription Oligocapture and oligocapping Race 3 'and 5' transfection methods PBR322 vectors PUC vectors lambda vectors MI3 vectors Pac vectors BAC vectors Cosmids Artificial chromosomes of yeast YAC eukaryotic and prokaryotic expression vectors Cloning and screening Shotgun and hierarchical sequencing New cDNA NGS Library sequencing methods: Bioinformatics: search in databases by keywords (eg Pubmed), application of the Blastn, Blastp and Blastx algorithms in the functional analysis of DNA and protein sequences. Annotation.</p>
Bibliography and textbooks	Tecniche e metodi per la biologia molecolare. Amaldi et al. Zanichelli
Notes to textbooks	The PowerPoint of the lessons are available as support.
Teaching methods	Frontal lessons with the use of power point.
Assessment methods (oral, written, ongoing assessment)	Oral exam
Evaluation criteria (describe criteria for each of the above expected outcomes)	in addition to ascertaining the acquisition of concepts, the ability to answer questions and the ability to reason will be evaluated.
Further information	