Main course information	
Academic subject	Genetic Methodologies (MetBio18)
Degree course	Biological sciences
Degree class	L-13
ECTS credits (CFU)	5
Compulsory attendance	Yes
Teaching language	Italian
Accademic Year	2019/2020

Professor/Lecturer	
Name & SURNAME	Maria Francesca Berloco
email	mariafrancesca.berloco@uniba.it
Tel.	080-5443391(laboratorio) - 080-5443393 (ufficio)
Tutorial time/day	Wednesday 11.00-13.00 or on appointment by e-mail

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

Teaching schedule	Year	Semester
	III	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
	3	24	2	24	-	-	-	-

Time management	Total hours	Teaching hours	Self-study hours
	125	48	77

Academic Calendar	First lesson	Final lesson
	March 2020	June 2020

Syllabus	
Course entry requirements	Genetics and Molecula Biology
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)	
Knowledge and understanding	Acquisition of knowledge of the fundamentals of Molecular Genetics, operational tools for understanding genetic methodologies applied to yhe study of genomes, heredity and genetic engineering.
Applying knowledge and understanding	Ability in the application of biomolecular broad spectrum methodologies in genetics and genetic engineering.
Making informed judgements and choices	Students must demonstrate to have acquired ability to choose and apply the most appropriate molecular-genetic methodologies in an autonomous way.
Communicating knowledge and understanding	Acquisition of the correct terminology in the genetics field; students must exhibit skills for communication through the use of correct formal genetics language.
Capacities to continue learning	Acquisition of the ability to investigate issues and topics related to the teaching and follow the evolution of the discipline with a critical spirit, through the consultation of texts, scientific papers and databases.

Syllabus

Course content	Methods of genetic analysis Polymorphism High-resolution chromosome Maps Genetic Maps, Physical Maps, Cytogenetic Maps Using Genome Maps in Genetic analysis. Forward and Reverse Genetics Mechanisms of Spontaneous Mutation Mutation induction and mutants selection Transposable Elements and molecular consequences of transposition Rearrangements mediated by transposable elements P element in Drosophila and Hybrid dysgenesis Genotype-phenotype relationships Cloning a Specific Gene Positional cloning Cloning a gene by transposon tagging Gene targeting in mouse Genome editing CRISPR-cas mediated and potential applications Expressing Eukaryotic genes in Bacteria Choosing an expression Vector Recombinant DNA Technology in Eukaryotes Genetic Engineering in animals Transgenic Eukaryotes Laboratory experiences Laboratory experiences are conducted in parallel with frontal lessons. Use of drosophila as model organism to genetically map a gene Recognize wild type and mutants phenotypes

	Mapping genes : white, yellow and forked Crosses setting up F1 and F2 progeny analysis Calculation of map distances Cytogenetic analysis of chromosomes Dissection and preparation of polytene chromosomes Microscope analysis Fish Recognize a human karyotype Transgenic Eukaryotes Drosophila embryos microinjection Database as Flybase, NCBI: Consultation of database and tools; The OMIM –NCBI database. Protein purifications and analysis by acrylamide gel electophoresis.
Course books/Bibliography	Analisi genetica avanzata. Philip Meneely; McGraw-Hill
Notes	Integration with other books of Genetics and Molecular Genetic available in library and Lecture Power Points (no lecture notes) are available as support to the study.
Teaching methods	Lectures with the use of PowerPoint; workshops at the blackboard, lab experiences.
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 the evaluation of the exam and in the assignment of the final grade, will be taken into consideration the acquired level of knowledge of the course contents, the ability to choose the appropriate methodological approach for a given genetics problem, the ability to make connections with other disciplines.
Further information	