

General Information	BACELOR DEGREE IN BIOTECHONOLOGIES
Title of the subject	Biotechnologies applied to Plant Pathology
Degree Course (class)	Biotechnologie applied to Industry and Agrifood (L-2)
ECTS credits	6
Compulsory attendance	YES
Language	Italian
Academic year	2020/2021

Subject Teacher		
Name and Surname	Donato Gallitelli	
email address	donato.gallitelli@uniba.it	
Place and time of reception	Teacher's study. Campus E. quagliariello, Building former Faculty of Agricultural Sciences, 2nd floor Monday and Thursday, 10:30-12:30 a.m. by appointment via email	
ECTS credits details	Discipline sector (SSD)	Area
	AGR/12	characterizing

Study plan schedule	Year of study plan		Semester	
	III		I	
Time management	Lessons	Laboratory	Exercises	Total
CFU	5	1		6
Total hours	125	25		150
In-class study hours	40	12		52
Out-of-class study hours	85	13		98

Syllabus	
Prerequisites / Requirements	
General, inorganic and organic chemistry Plant genetic Molecular Biology Plant anatomy and physiology	
Expected learning outcomes (according to Dublin descriptors)	
Knowledge and understanding	The student will acquire the basic knowledge: <ul style="list-style-type: none"> - of biological and epidemiological characteristics of microorganisms causing biotic stresses to plants - of enzymes necessary for DNA manipulation and characterization - methods used for plant genetic transformation - of current legislation for laboratory/experimental use of MOGM and PSGM
Applying knowledge	The student will manage: <ul style="list-style-type: none"> - techniques for sample collection from seeds and plants to be

	<p>subjected to pathogen detection and identification.</p> <ul style="list-style-type: none"> - Ongoing approaches for detection and identification of plant pathogens, based on serology and properties of nucleic acids - techniques for identification, isolation, cloning and use of genes useful in plant defense from biotic stresses - techniques for monitoring genetically modified microorganisms (GMO) and genetically modified higher plants (PSGM)
Making informed judgments and choices	The student will acquire the basic knowledge to critically interpret the laboratory data in terms of its scientific value, highlighting its strengths and weaknesses.
Communicating knowledge	<p>The student will acquire adequate knowledge and skills:</p> <ul style="list-style-type: none"> - for the oral communication of biological and epidemiological characteristics, agents of plant diseases and the possibilities offered by biotechnologies for their isolation and characterization. - to speak with specialists and non-specialists on current problems concerning plant pathology for which it is possible to foresee solutions through biotechnological methods and approaches.
Capacities to continue learning	<p>The student will have developed learning skills :</p> <ul style="list-style-type: none"> - for the correct reading and interpretation of scientific literature - in plant pathology by consulting bibliographic material in paper and electronic formats

Study Program

Content	<p>Part I. 2 CFU lectures</p> <p>Principles of plant pathology:</p> <ul style="list-style-type: none"> • Characteristics of the main phytopathogenic fungi, bacteria and phytoplasmas • Brief description of the main biotic and abiotic stresses • Techniques for the isolation and maintenance of phytopathogenic agents <p>Part II: 2 CFU lectures, 0.5 CFU laboratory</p> <p>Identification, isolation, characterization and use of genes</p> <ul style="list-style-type: none"> • Identification, isolation and cloning techniques of genes useful in plant pathology • Consultation of databases • Preparation and use of serological and molecular diagnostics <p>Part III: 1 CFU of lectures 0.5 CFU laboratory</p> <p>Sanitary improvement of crops</p> <ul style="list-style-type: none"> • Tissue culture • Methods for obtaining MOGM and PSGMs of interest in Plant Pathology
Bibliography and textbooks	<p>Notes and slides from lessons</p> <p>G.N. AGRIOS, Plant Pathology (fourth Edition) Academic Press</p> <p>Rao R. e Leone A. Biotecnologie e genomica delle piante, 2014</p> <p>Idelson Gnocchi</p>
Notes to textbooks	

Teaching methods	slides, movies, laboratory activity
Assessment methods (oral, written, ongoing assessment)	Oral by intermediate tests and final exam
Evaluation criteria (describe criteria for each of the above expected outcomes)	The assesment of the learning outcomes concerning single indicators will take place during the lessons, laboratories, ongoing tests and during the oral interview for the final exam. In particular it is expected the student will correctly understand the question asked and provide in a concise manner but with adequate arguments, the details necessary to formulate the correct answer, also through corss references with similar topics covered in the teaching program
Further information	