



General Information	
Academic subject	Plant physiology (Module of I.C. Plant physiology and physiopathology)
Degree course	Master's degree Plant Medicine (LM69)
Curriculum	
ECTS credits	3
Compulsory attendance	No
Language	Italian (English will be used when required for foreign students into didactic material)

Subject teacher	Name Surname	Mail address	SSD
	Claudio Cocozza	claudio.cocozza@uniba.it	Agr 13

ECTS credits details			ETCs
Basic teaching activities	Crop production		3

Class schedule	
Period	First semester
Year	First year
Type of class	Lectures 2 ECTS (16 hours) Laboratory and field classroom and workshops, 1 ECTS (14 hours) E-learning using public (eg Teams) and dedicated (Agripodcast) platforms can be used, on demand as learning facilities for students with disabilities and for working students, student athletes and students with babies

Time management	
Hours	75
In-class study hours	30 (16 h lectures + 14 h Lab & field cl.)
Out-of-class study hours	45

Academic calendar	
Class begins	28 th of September 2020
Class ends	22 nd of January 2021

Syllabus	
Prerequisites/requirements	None
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)	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Attainment of an in-depth knowledge of plant physiology useful to understand the interactions between plant and environment, with a specific focus on the main abiotic factors influencing plant growth and productivity <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Ability to identify and control the mechanisms naturally used by plants to cope with the surrounding abiotic environment, in order to improve both plant growth and productivity <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ Ability to analyze the interactions occurring between plant and abiotic environment and, consequently, to schedule and manage useful measurements to enhance both quality and yield of crop productions <p><i>Communicating knowledge and understanding</i></p>



	<ul style="list-style-type: none"> ○ Capability to communicate clearly and exhaustively the acquired knowledge, using an appropriate technical and scientific language <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ Ability to understand and elaborate critically the contents of the course, and put in relation the information learned and the scientific background acquired during the university educational path <p>Expected learning outcomes, as knowledge and ability, are reported in the annex A of the Didactic Regulation of the course Plant Medicine (expressed by European Descriptors)</p>
Contents	<ul style="list-style-type: none"> ○ Signal transduction: signal receptors in plant cells, main cellular transduction pathways, signal transduction in plants. ○ Phytochrome: structure, biochemical and photochemical properties, mechanisms of action, plant response modulated by phytochrome, ecological implications. ○ Blue light photoreceptors: structure and mechanisms of action of cryptochromes, phototropins, and zeaxanthin; plant responses to blue light. ○ Secondary metabolites: terpenoids, phenolic compounds, nitrogen containing secondary metabolites. Structure, biosynthesis, biological role. Extraction and quantification of anthocyanins from plant samples, and evaluation of colour changing according to pH. ○ Plant hormones: auxins, gibberellins, cytokinins, abscisic acid, ethylene. Structure, biosynthesis and deactivation, transduction pathways, physiological effects. Applications of phytohormones in agriculture: focus on plant growth regulators and biostimulants. ○ Stress physiology: stress induced by water deficit, freezing and chilling, heat, oxygen deficit, salinity, UV radiation. Damage induced by stress on plants; strategies adopted by plants to cope with abiotic stress.
Course program	
Bibliography	Taiz L., Zeiger E., Plant Physiology, 5th Edition, Sinauer Associates, 2012
Notes	<p>Notes of the lectures and didactic material distributed during the course.</p> <p>Suggested websites for further information:</p> <ul style="list-style-type: none"> ○ http://treccani.it/enciclopedia/fisiologia-delle-piante_(Enciclopedia-della-Scienza-e-della-Tecnica)/ ○ http://www.plantphysiol.org/ ○ https://www.frontiersin.org/journals/plant-science/sections/plant-physiology#
Teaching methods	Lectures are held through Power Point presentations
Assessment methods (indicate at least the type written, oral, other)	<p>The final examination is an oral verification (at least three questions) of the knowledge of topics presented during the theoretical and practical lessons, as reported in the Didactic Regulation of the Master course in Plant Medicine (art.9) and in the didactic plan (annex A).</p> <p>The knowledge and skills acquired by the student are evaluated using the criteria indicated in Annex A of Didactic Regulation of the Master course in Plant Medicine.</p> <p>Students attending the first year of the Master degree course are allowed to register for an intermediate oral test, whose result is valid for one academic year. In this case, the final result will be calculated as the average between the result of the intermediate test and the result of the final examination.</p>



UNIVERSITÀ
DEGLI STUDI DI BARI
ALDO MORO

DIPARTIMENTO DI
SCIENZE DEL SUOLO, DELLA
PIANTA E DEGLI ALIMENTI

LAUREA MAGISTRALE IN
MEDICINA DELLE PIANTE
INTERNATIONAL JOINT MASTER DEGREE IN
PLANT MEDICINE



<p>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.</p>	<p>Oral examination of foreign students is carried out in English.</p> <ul style="list-style-type: none"> • <i>Knowledge and comprehension ability</i> <ul style="list-style-type: none"> ○ In-depth knowledge of plant physiology in order to understand the interactions between plants and environment; ○ Comprehension of (i) the effects of abiotic factors on plant growth and productivity, and (ii) the strategies adopted by plants to cope with extreme environmental conditions • <i>Knowledge and applied comprehension ability</i> <ul style="list-style-type: none"> ○ Ability to identify and control the mechanisms naturally used by plants to cope with the surrounding environment, in order to enhance plant growth and increase crop yields; ○ Knowledge of the main applications in agriculture of plant metabolites (hormones, secondary metabolites) • <i>Autonomy of judgement</i> <ul style="list-style-type: none"> ○ Ability to analyze, both in laboratory and in field, the interactions between plant and abiotic environment in order to schedule and manage useful measurements to improve both quality and yields of crop productions • <i>Communication skills</i> <ul style="list-style-type: none"> ○ High coherence with the contents of the course, correct use of technical and scientific language, ability to create connections with the knowledge already acquired in previous courses. ○ Ability to organize the acquired knowledge in form of didactic presentation and to articulate it for didactic purposes • <i>Learning ability</i> <ul style="list-style-type: none"> ○ Ability to understand and elaborate critically the contents of the course
<p>Further information</p>	<p>Visiting hours All the days, by previous agreement. Tutoring could be also on e-learning platforms.</p>