

General Information	
Academic subject	Plant physiology (Module of I.C. Plant physiology and physiopathology)
Degree course	Master Degree in Plant Medicine
ECTS credits	3
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Concetta Eliana GATTULLO	concettaeliana.gattullo@uniba.it	AGR/13

ECTS credits details			
Basic teaching activities	Crop production		

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)

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	October 9, 2017
Class ends	January 26, 2018

Syllabus	
Prerequisites/requirements	None
Expected learning outcomes (according to Dublin Descriptors)	<ul style="list-style-type: none"> ● <i>Knowledge and understanding:</i> Attainment of 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. ● <i>Applying knowledge and understanding:</i> 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. ● <i>Making informed judgements and choices:</i> Ability to analyze the interactions occurring between plant and abiotic environment and, consequently, to schedule and manage useful measurements to enhance both quality and yields of crop productions. ● <i>Communication skills</i> <ul style="list-style-type: none"> ○ Capability to communicate clearly and exhaustively the acquired knowledge, using an appropriate technical and scientific language. ● <i>Learning skills</i> <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.

	The expected learning results, in terms of knowledge and skills, are reported in the Attachment A to the Didactic Regulation of the Master Programme (expressed through the European Descriptors of the Master degree).
Contents	<ul style="list-style-type: none"> • Signal transduction: signal receptors in plant cells, cellular transduction pathways, signal transduction in plants. • Phytochrome: structure, biochemical and photochemical properties, mechanisms of action, plant response induced by phytochrome, ecological implications. • Blue light photoreceptors: cryptochromes, phototropins, zeaxanthin; plant responses to blue light. • Plant hormones: auxins, gibberellins, cytokinins, abscisic acid, ethylene, brassinosteroids. Structure, biosynthesis and deactivation, transduction pathways, physiological effects, potential applications in agriculture. • 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. • Secondary metabolites: terpenoids, phenolic compounds, nitrogen-containing secondary metabolites. Structure, biosynthesis, biological role.
Course program	
Bibliography	<ul style="list-style-type: none"> • Taiz L., Zeiger E., Plant Physiology, 5th Edition, Sinauer Associates, 2012
Supplementary material	<ul style="list-style-type: none"> • Notes of the lectures and didactic material distributed during the course
Teaching methods	Lectures are presented through Power Point presentations
Assessment methods	<p>The final examination is an oral verification 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 (attachment A). The knowledge and skills acquired by the student are evaluated using the criteria indicated in Attachment 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> <p>Oral examination of foreign students is carried out in English.</p>
Evaluation criteria	<ul style="list-style-type: none"> • <i>Knowledge and understanding:</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>Applying knowledge and understanding:</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>Making informed judgements and choices:</i> Ability to analyze, both in laboratory and in field, the interactions

	<p>between plant and abiotic environment in order to schedule and manage useful measurements to improve both quality and yields of crop productions.</p> <ul style="list-style-type: none"> ● <i>Communication skills</i> 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. ● <i>Learning skills</i> Ability to understand and elaborate critically the contents of the course.
Further information	<p>Visiting hours All afternoons, by previous agreement.</p>