

General Information	
Academic subject	Genetic resistances to plant diseases (Module of Plant Breeding of agricultural crops)
Degree course	Master Course in Plant Medicine (LM69)
Curriculum	
ECTS credits	3
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Mario AMENDUNI	mario.amenduni@uniba.it	AGR12

ECTS credits details			
Basic teaching activities	Disciplines of plant protection		

Class schedule	
Period	First semester
Year	Second year
Type of class	Lectures, 4 ECTS (32 hours) Laboratory and field classroom and workshops, 2 ECTS (28 hours)

Time management	
Hours	75
In-class study hours	30 (16 Lectures + 214 Lab & field cl.)
Out-of-class study hours	45

Academic calendar	
Class begins	October 2, 2017
Class ends	January 26, 2018

Syllabus	
Prerequisites/requirements	
Expected learning outcomes	<ul style="list-style-type: none"> • <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ Knowledge on physiological and genetic basis of plant resistance to diseases ○ Knowledge on method to find resistances, breeding plants for resistance and manage resistant varieties ○ Knowledge on sources of resistances utilized to constitute resistant varieties to main plant diseases • <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> ○ Understanding strength and weakness of control strategies based on use of resistant plant varieties ○ The ability to understand, apply and design plant breeding programme for resistance to diseases • <i>Making informed judgements and choices</i> <ul style="list-style-type: none"> ○ The ability to assess in different environmental and crop conditions the usefulness of available resistant varieties for plant disease control • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ The ability to express clearly and synthetically the contents of the course by using the specific formal language • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ The ability to use knowledge and understanding obtained from the course to continuously upgrade new knowledge concerning plant resistance to diseases

	<p>The expected results of learning, in term of knowledge and skills, are listed in the Annex A of the Teaching Regulation of the Master Course in Plant Medicine (expressed by means of the European Descriptors of the Master Course; concerning the Plant Protection disciplines).</p>
Contents	<ul style="list-style-type: none"> The module concerns physiological and genetic basis of plant resistance to diseases and methods of breeding for resistance and managing resistance genes. Moreover, knowledge on resistance to diseases of plant germplasm and cultivars of the main crops will be provided.
Course program	<p>The use of resistances among the control means of plant diseases. Pathogenesis and defence reactions of plants. Resistance variability in plants and variability of pathogens. Types and sources of resistance.</p> <p>Genetic basis of resistance. The gene-for-gene theory and the plant-pathogen co-evolution. Physiological races and resistance managing methods. Factors affecting expression of resistance</p> <p>Production of resistant varieties: methods of breeding for resistance and bio-technological methods.</p> <p>Disease resistances of some important crops:</p> <ul style="list-style-type: none"> wheat, barley and other cereals tomato, potato, pepper and eggplant melon, watermelon and cucumber lettuce peas apple, plum, olive cypress <p>Testing and selecting for resistance:</p> <ul style="list-style-type: none"> artificial inoculation methods for resistance screening; disease assessment methods; case studies of resistance breeding of greenhouse and field crops.
Bibliography	<ul style="list-style-type: none"> Crinò P. et al., 1993. Miglioramento genetico delle piante per resistenza a patogeni e parassiti. Edagricole. Crute E.B. et al., 1997. The gene-for-gene relationship in plant-parasite interactions. CAB International. Slusarenko A.J. et al., 2001. Mechanisms of resistance to plant diseases. Kluwer Academic Publishers. Agrios G.N., fifth edition. Plant Pathology. Elsevier Academic Press.
Notes	
Teaching methods	<p>Lectures presented through PowerPoint, slide projector and other supports.</p> <p>Lab, field and greenhouse training.</p> <p>Working groups of students for study and discussion of scientific publications concerning course topics.</p>
Assessment methods	<p>For students enrolled in the course year, in which the teaching is done, there will be a mid-term test which result lasts for one year. It is done by carrying out an oral exam concerning the topics covered in class until the date of the mid-term test. A final test takes place on the remaining parts of the program not included in the intermediate test. Final mark of the exam is calculate as the mean of the results of mid-term and final tests.. For students who do not support the intermediate test, the exam consists of an oral test on the topics covered during lectures and lab, field and greenhouse training.</p>

	The final examination mark will be in thirtieth. Foreign students can perform the exam in English.
Evaluation criteria	<ul style="list-style-type: none"> • <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student have to be able to reach a sufficient knowledge on genetic resistance to plant diseases. • <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student have to be able to apply traditional and innovative techniques in the topic of the course • <i>Making informed judgements and choices</i> <ul style="list-style-type: none"> ○ The student have to be able to speculate the mechanism of heritability of genetic resistance to plant disease. • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student have to be able to explain topics acquired during classes. ○ The student is expected to show the achievement, according with previously reported expected learning, outcome, at least of the satisfactory knowledge levels, to start professional activity.
Further information	Visiting hours: On appointment to be defined by e-mail