

<b>General Information</b>	
Academic subject	Integrated Course: Principles of Integrated Crop Protection Module: Environmentally Friendly Management of Plant Protection from Diseases
Degree course	Master Course in Sustainable Management of the Mediterranean Countryside
Curriculum	
ECTS credits	3
Compulsory attendance	No
Language	Italian

<b>Subject teacher</b>	Name Surname	Mail address	SSD
	Rita Milvia De Miccolis Angelini	ritamilvia.demiccolisangelini@uniba.it	AGR12

<b>ECTS credits details</b>			
Basic teaching activities	Forestry and environmental disciplines		

<b>Class schedule</b>	
Period	First semester
Year	First year
Type of class	Lecture- workshops

<b>Time management</b>	
Hours	75
In-class study hours	30
Out-of-class study hours	45

<b>Academic calendar</b>	
Class begins	9th October, 2017
Class ends	26th January, 2018

<b>Syllabus</b>	
Prerequisites/requirements	Knowledge of Plant Pathology
Expected learning outcomes	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>o Knowledge and understanding of principles, methods and tools for plant protection from diseases.</li> <li>o Knowledge and understanding of the European and National regulations on plant protection products.</li> <li>o Knowledge and understanding of classification of fungicides, their modes of action and resistance.</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>o Knowledge and understanding of the sustainable usage of plant protection products.</li> <li>o Knowledge and understanding for a rational approach to planning crop protection strategies.</li> <li>o Knowledge and understanding of the phenomenon of acquired fungicide resistance.</li> </ul>

	<p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>o Ability to apply basic principle of the plant protection to different crop environments.</li> <li>o Ability to understand how to prevent and/or manage fungicide resistance.</li> <li>o Ability to plane crop protection strategies aimed at ensuring yield, quality safety and security and at minimizing the environmental impact and risks for human health.</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>o Ability of describing suitable biological and integrated protection strategies for the most important Mediterranean crops.</li> <li>o Ability of evaluating the benefits, risks and negative side effects of crop protection strategies.</li> <li>o Ability of evaluating the sustainability of crop protection strategies.</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>o Capacities of updating the knowledge on crop protection and related regulation.</li> </ul>
Contents	<ul style="list-style-type: none"> <li>• Presentation of the course and educational aims.</li> <li>• Historical evolution of crop protection.</li> <li>• Legislative, agronomic, physical, genetic, biological and chemical measures.</li> <li>• Normative on the commercialization and usage of plant protection products and microbial antagonists.</li> <li>• Crop protection: environmental sustainability and food safety.</li> <li>• Functional classification of fungicides and their modes of action.</li> <li>• Resistance of fungi to fungicides.</li> <li>• Biological control.</li> <li>• Inducers of plant resistance (SAR).</li> <li>• Crop protection in organic agriculture.</li> <li>• Integrate Pest Management (IPM) guidelines.</li> <li>• Case studies: integrated protection from diseases of grapevine and stone fruits.</li> </ul>
Course program	
Bibliography	<ul style="list-style-type: none"> <li>• Lorenzini G., Nali C., 2012. Principi di Fitoiatria, Edagricole-New Business Media, Bologna, pp. 261.</li> <li>• Battilani P., 2016. Difesa sostenibile delle colture. Principi, sistemi e tecnologie applicate alle Produzioni agricole. Edagricole-New Business Media, Bologna, pp. 308.</li> <li>• Personal notes of the lectures and didactic materials distributed during the course.</li> </ul> <p><b>Additional readings</b></p> <ul style="list-style-type: none"> <li>• <a href="http://agricoltura.regione.emilia-romagna.it/fitosanitario/doc/prodotti-fitosanitari/Manuale-basso-impatto">http://agricoltura.regione.emilia-romagna.it/fitosanitario/doc/prodotti-fitosanitari/Manuale-basso-impatto</a></li> <li>• <a href="http://fitogest.imagelinenetwork.com">http://fitogest.imagelinenetwork.com</a></li> <li>• <a href="http://www.frac.info/">http://www.frac.info/</a></li> <li>• <a href="https://www.eppo.int/">https://www.eppo.int/</a></li> <li>• <a href="http://www.fao.org/home/en/">http://www.fao.org/home/en/</a></li> <li>• <a href="http://www.ecpa.eu/">http://www.ecpa.eu/</a></li> </ul>

	<ul style="list-style-type: none"> <li>• <a href="http://www.apsnet.org/">http://www.apsnet.org/</a></li> <li>• <a href="http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=homepage&amp;language=EN">http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=homepage&amp;language=EN</a></li> <li>• Atti Giornate Fitopatologiche.</li> <li>• Further materials as research articles and websites will be provided on request.</li> </ul>
Notes	
Teaching methods	Oral presentation supported by Power Point slides, web sites and multimedia, documents prepared by the teacher and practical exercises in the classroom and in the laboratory.
Assessment methods (indicate at least the type written, oral, other)	<p>Only the students enrolled in the academic year during which this discipline is offered, can have an intermediary exam during the teaching period of the discipline. The result of this intermediary exam remains valid for the whole academic year and concurs to the final evaluation of the student.</p> <p>The intermediary exam will be given on the subjects treated during the lessons and the practical activities as reported in the Didactic Regulation of the Master course (art. 9) and syllabus (annex A) and which is correlated to the actual teaching period. The evaluation of the intermediary exam is expressed in thirtieths.</p> <p>At the end of the module teaching period, the students, who passed positively the intermediary exam, can give the final exam concerning on the subjects treated during the lessons and the practical activities since the intermediary exam, as reported in the Didactic Regulation of the Master Course (art. 9) and syllabus (annex A) and which is correlated to the actual teaching period.</p> <p>Students who did not pass or give the intermediary exam will be examined on the whole subjects treated during the lessons and the practical activities as reported in the Didactic Regulation of the Master course (art. 9) and syllabus (annex A) and which is correlated to the actual teaching period.</p> <p>The intermediary and the final exams consist of an oral test. The evaluation of the student is based on criteria previously fixed such as reported in the Annex A of the Didactic Regulation of the Master Course in Sustainable Management of the Mediterranean Countryside. The exam for foreign students can be given in English according to the above reported modalities.</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.	<ul style="list-style-type: none"> <li>• <i>Knowledge and comprehension ability</i> <ul style="list-style-type: none"> <li>○ Ability to describe the principles, methods and tools for plant protection from diseases.</li> <li>○ Ability to describe the European and National regulations on plant protection products.</li> <li>○ Ability to describe the fungicides and their modes of action and resistance.</li> <li>○ Ability to describe the phenomenon of acquired fungicide resistance.</li> </ul> </li> <li>• <i>Knowledge and applied comprehension ability</i> <ul style="list-style-type: none"> <li>○ Ability to define appropriate protection strategies for Mediterranean crops.</li> <li>○ Ability to define suitable strategies for preventing or managing fungicide resistance.</li> </ul> </li> <li>• <i>Autonomy of judgement</i></li> </ul>

	<ul style="list-style-type: none"> <li>○ Ability to describe benefits, risks and negative side effects of crop protection strategies.</li> <li>○ Ability to adapt general roles to specific crops and situations.</li> <li>• <i>Communication skills</i> <ul style="list-style-type: none"> <li>○ Ability to explain in exhaustive way, with appropriate words, richness of conceptual connections and examples, the principles, methods and tools for crop protection, the Regulations on plant protection products, fungicides and their mode of action, fungicide resistance, sustainable protection strategies for Mediterranean crops.</li> </ul> </li> <li>• <i>Learning ability</i> <ul style="list-style-type: none"> <li>○ Ability to apply acquired knowledge and skills for problem solving in various operative situations.</li> </ul> </li> </ul>
Further information	<p><b>Visiting hours</b>  From Monday to Wednesday, 9.00 to 13.30 or in the afternoon following an established appointment requested to the teacher (by phone or e-mail).</p>