



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



General Information	
Academic subject	Pesticide application equipment (Module of I.C. Applied engineering)
Degree course	Plant Medicine (LM69)
Curriculum	
ECTS credits	3
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Simone PASCUZZI	simone.pascuzzi@uniba.it	AGR/09

ECTS credits details	
Basic teaching activities	Engineering applied

Class schedule	
Period	First semester
Year	Second year
Type of class	Lectures 2 ECTS (16 hours) Laboratory and field classroom, working groups, study case, and transferring of stakeholders' experiences, 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 Lectures + 14 Lab & field cl.)
Out-of-class study hours	45

Academic calendar	
Class begins	September 28, 2020
Class ends	January 22, 2021

Syllabus	
Prerequisites/requirements	Mathematics, Physics and Mechanics and Mechanizations in agriculture (propaedeutic).
Expected learning outcomes	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Knowledge of equipment for the application the pesticides also related with new precision agricultural systems. ○ Knowledge of the main sprayer setup systems, with reference to recent European Directives on the sustainable use of pesticides. ○ Knowledge of innovative design of integrated crop protection ad management systems to improve the qualitative, quantitative and sanitary aspects of plant production. <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Applying knowledge to recognize and manage machines for pesticides application.



	<ul style="list-style-type: none"> ○ Applying knowledge to select the equipment for pesticides application. ○ Applying knowledge to setup and identify operating parameters suitable for improving the efficiency of spraying machines, with reference to recent European Directives on the sustainable use of pesticides. ○ Applying knowledge to identify the technologies and good practices of attenuation of drift phenomena. ○ Applying knowledge to use of integrated pesticides management techniques and plant protection to improve the qualitative, quantitative and sanitary aspects of plant production. <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ Ability to analyze the different production systems and market environment, to plan actions and to manage interventions to improve the quality and efficiency of crop protection and any other related activity, including in terms of sustainability and eco-compatibility. ○ Ability to work autonomously in a team with technical experts and operators in the field of applied crop protection. <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Ability to expose and argue on complex issues of applied crop protection both in written and oral form. ○ Communication and reporting skills within a multidisciplinary working group and ability to judge technical, economic, human and ethical issues. ○ Ability to use, in written and oral form, at least one language of the European Union beyond Italian, preferably English. <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ Ability to learn through the development of cognitive tools and logical elements related to the applied engineering industry for crop protection. ○ Ability to use the tools and new IT technologies that ensure a continuous updating of knowledge in the specific professional field and in the field of scientific research. <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>
<p>Contents</p>	<ul style="list-style-type: none"> • Generality and classification of pesticides; technical information concerning the doses, the volumes, the deposits, the residues, the conditions for a correct distribution and the manner of employment. • Classification of the treatments with solid, liquid, gasiform state pesticides, and of the machines for their distribution. • Analysis and evaluations of the populations of droplets. • The sprayers for the distribution of the liquid pesticide products. Techniques for the making and the conveyance of the droplets. • Technologies, component production, working control systems. Methods to make a choice of the sprayers that atomize the



	<p>liquid under pressure, the air-assisted sprayers, the pneumatic sprayer, centrifugal sprayers, the thermal sprayers.</p> <ul style="list-style-type: none"> • Machines for pesticide treatments over covered crops • The inspection and the adjustment of the sprayers • Operational choices • Precision agriculture and use of Unmanned aerial vehicles
Course program	
Bibliography	<ul style="list-style-type: none"> • Lecture notes and course materials distributed in class • Baldoin C. "Irroratrici". Edagricole, Bologna, 2012 • Balsari P., Airoidi G. - "Macchine per la distribuzione dei fitofarmaci e per il controllo delle malerbe nelle colture erbacee". SAVE, Milano, 1993. • Bodria L., Pellizzi G., Piccarolo P. "Meccanica Agraria: Il trattore e le macchine operatrici". Vol. 1°. Edizioni Il Sole24Ore. Edagricole, Bologna, 2005. • Savi D. "Attrezzature per la difesa delle piante". Edizioni L'Informatore Agrario, Verona, 1996.
Notes	
Teaching methods	<p>The topics of the course will be treated with the help of Power Point presentations and samples of machinery and equipments. All students could receive all presentations and texts utilized for lectures.</p>
Assessment methods (indicate at least the type written, oral, other)	<p>Only the students enrolled in the academic year during which this module is provided, can have an intermediary exam during the time of teaching. The result of this intermediary exam remains valid for the whole academic year and concurs to the final evaluation of the student (in proportion to the ECTS evaluated during the intermediary exam). The exam, as well as the intermediary exam, consist of an oral test with questions related to the lectures and laboratory classes, such as reported in the Didactic Regulation in Plant Medicine (art.9) and in the syllabus (annex A). A minimum of 4 questions will be proposed to the student; two of them will regard the components of the sprayer machines, two of them will regard the choice and adjustment criteria required by this type of machines. The intermediary exam will be positive with a vote of at least 28/30. 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 Plant Medicine and is expressed in thirtieths.</p>
Evaluation criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ The student is able to recognize the equipment for the pesticides application. ○ The student is able to operate with the main sprayer setup systems, with reference to recent European Directives on the sustainable use of pesticides. ○ The student is able to design innovative integrated crop protection and management systems. <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ The student is able to recognize and manage machines for pesticides application. ○ The student is able to select the equipment for pesticides application.



	<ul style="list-style-type: none"> ○ The student is able to setup and identify operating parameters suitable for improving the efficiency of spraying machines, with reference to recent European Directives on the sustainable use of pesticides. ○ The student is able to identify the technologies and good practices of attenuation of drift phenomena. ○ The student is able to use the integrated pesticides management techniques and plant protection to improve the qualitative, quantitative and sanitary aspects of plant production. <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ The student is able to analyze the different production systems and market environment, to plan actions and to manage interventions to improve the quality and efficiency of crop protection and any other related activity, including in terms of sustainability and eco-compatibility. ○ The student is able to work autonomously in a team with technical experts and operators in the field of applied crop protection. <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ The student is able to expose and argue on complex issues of applied crop protection both in written and oral form. ○ The student is able to communicate within a multidisciplinary working group and reporting on technical, economic, human and ethical issues. ○ The student is able to use, in written and oral form, at least one language of the European Union beyond Italian, preferably English. ○ The student is able to organize the acquired knowledge in form of didactic presentation and to articulate it for didactic purposes. <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ The student is able to learn through the development of cognitive tools and logical elements related to the applied engineering industry for crop protection. ○ The student is able to use the tools and new IT technologies that ensure a continuous updating of knowledge in the specific professional field and in the field of scientific research.
<p>Further information</p>	<p>Visiting hours Official visiting hours: 9.30 – 13.30 according to an established appointment requested by phone or e-mail. Tutoring could be also on e-learning platforms.</p>