

General information	
Academic subject	TREE CROPS AND PRECISION FRUIT FARMING
Degree course	AGRO-ENVIRONMENTAL AND TERRITORIAL SCIENCES (LM-69)
Academic Year	Second
European Credit Transfer and Accumulation System (ECTS)	9
Language	Italian
Academic calendar (starting and ending date)	First semester 28/09/2021 – end of January 2022
Attendance	Highly recommended

Professor/ Lecturer	
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Department and address	DiSAAT - tree crops, fourth floor, room 60
Virtual headquarters	Microsoft TEAMS
Tutoring (time and day)	To be agreed

Syllabus	
Learning Objectives	The course aims to provide knowledge related to the most common fruit tree cropping systems in the Mediterranean area and to provide knowledge about precision fruit farming.
Course prerequisites	-
Contents	The course aims to provide the technical and scientific principles of the main fruit tree species widespread in Mediterranean environments and the fundamental knowledge for a correct design and management of fruit crops adopting environmentally and friendly farming practices. In addition, the course will provide information on the main agronomical techniques used for fruit tree orchards in order to evaluate spatial and temporal variability of soil and crops. Besides, for fruit tree crops an integrated monitoring approach will be considered through the use of remote sensing and proximal sensors.
Books and bibliography	<ul style="list-style-type: none"> • AGRICOLTURA DI PRECISIONE. METODI E TECNOLOGIE PER MIGLIORARE L'EFFICIENZA E LA SOSTENIBILITA' DEI SISTEMI COLTURALI. RAFFAELE CASA. EDAGRICOLE, 2016; • L'ACQUA IN AGRICOLTURA. GESTIONE SOSTENIBILE DELLA PRATICA IRRIGUA. MARCELLO MASTRORILLI. EDAGRICOLE, 2015; • PLANT PHYSIOLOGICAL ECOLOGY. H. LAMBERS, R.S. OLIVEIRA. SPRINGER, 2019; • AA. VV. ARBORICOLTURA GENERALE. PATRON EDITORE, 2012. • CITRUS. TRATTATO DI AGRUMICOLTURA. Vacante V., Calabrese F. Edagricole, 2009. • AA. VV. FRUTTICOLTURA SPECIALE. Reda, 1991. • VITICOLTURA MECCANIZZATA. Baldini E., Intrieri C. Edagricole, 2004. • VITICOLTURA MODERNA. Eynard I., Dalmaso G. Hoepli, 1990. • OLEA. TRATTATO DI OLIVICOLTURA. Fiorino P. Edagricole, 2003. • POTATURA E FORME DI ALLEVAMENTO DELL'OLIVO. Gucci R., Cantini C. Edagricole, 2004. • NUOVE FRONTIERE DELL'ARBORICOLTURA ITALIANA. Sansavini S. Oasi Alberto Perdisa, 2007. • FRUTTICOLTURA AD ALTA DENSITÀ. Sansavini S., Errani A. Edagricole, 1998.

	<ul style="list-style-type: none"> • VERSO UN APPROCCIO INTEGRATO ALLO STUDIO DEI SISTEMI COLTURALI. Bonari E., Ceccon P. Franco Angeli, 2002. <p>Further bibliographic material:</p> <ul style="list-style-type: none"> • AA. VV. FRUTTICOLTURA BIOLOGICA. L'informatore Agrario, 2001. • PLANT FORM. Timber Press, Bell A.D. 2008. • L'UVA DA TAVOLA. Colapietra M. Edagricole, 2004. • VITICOLTURA DI QUALITÀ. Fregoni M. Phytoline, 2006. • ECOFISIOLOGIA VEGETALE. Larcher W. Edagricole, 1993. • ECOLOGIA DELLE COLTURE AGRARIA. Porceddu E. Quadrifoglio, 1984.
Additional materials	Notes from lectures, ppt, open source software's;

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
225	60	30	135
ECTS			
9	6	3	
Teaching strategy		Frontal teaching, seminars, laboratory and field activities. There is no e-learning	
Expected learning outcomes			
Knowledge and understanding on:		<p>Knowledge and understanding of topics related to the technical and scientific principles of the most important fruit tree orchards widespread in Mediterranean environments.</p> <p>Knowledge, Making judgments, Communication Skills and Ability to learn technical and scientific principles of design and management of fruit tree orchards adopting environmentally and friendly farming practices.</p> <p>The expected learning outcomes in terms of knowledge and skills, are provided in Annex A of the teaching of the Program Regulations (expressed through the European Descriptors of the qualification).</p>	
Applying knowledge and understanding on:		Knowledge, ability to apply, judgment autonomy, communication skills and ability to learn, apply and design fruit tree orchards, knowledge of the technical means, application of innovative smart-technologies such as sensors and software in open field.	
Soft skills		<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> At the end of the course, the student must be able to develop the ability to autonomously acquire, understand and process data relating to business and production contests. The aim is to provide the student with the tools and autonomy of judgment aimed at representing complex problems and the relative solutions. These skills will be evaluated during the final exam. • <i>Communicating knowledge and understanding</i> At the end of the course, the student must be able to develop the following skills: 1. To communicate with farmers and/or farmer advisors, sales managers, fruit tree orchards design responsible, people in charge of the agronomic management of the fruit tree orchard, as well as with heads of public and/or private corporations; 2. To promote coordination between the 	

	<p>technical areas responsible for primary production, design and management of information systems; 3. To present the projects results and works developed through technical reports. Communication skills will be assessed through the final oral exam.</p> <ul style="list-style-type: none"> • <i>Capacities to continue learning</i> Graduates in "Agro-Environmental and Territorial Sciences" develop cognitive tools, logical elements and the familiarity with new information technologies, which guarantee a continuous updating of knowledge.
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Assessment and feedback	
Methods of assessment	The final exam consists of a power point presentation and an oral test on the topics developed during theoretical and theoretical-practical classes. The teacher reserves the right to assign to each student a year's theme to be carried out in writing and/or as a presentation at the end of course.
Evaluation criteria	<p>Knowledge and understanding of topics related to the technical-scientific principles of the main fruit tree cropping systems, fruit tree orchards management and application of smart technologies in agriculture.</p> <p>Knowledge, Making judgments, Communication Skills and Ability to learn technical and scientific principles of design and management of fruit tree orchards adopting environmentally, friendly and smart farming practices.</p>
Criteria for assessment and attribution of the final mark	The final score is awarded out of thirty. The exam is passed when the score is greater than or equal to 18. The laude is awarded to the students who demonstrates excellent line of reasoning and defence skills.
Additional information	