



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Scienze Agrarie, Alimentari e Forestali
<b>ACADEMIC YEAR</b>	2017/2018
<b>MASTER'S DEGREE (MSC)</b>	AGRICULTURAL SCIENCES AND TECHNOLOGIES
<b>INTEGRATED COURSE</b>	DECIDUOUS WOODY PLANTS - INTEGRATED COURSE
<b>CODE</b>	15396
<b>MODULES</b>	Yes
<b>NUMBER OF MODULES</b>	2
<b>SCIENTIFIC SECTOR(S)</b>	AGR/03
<b>HEAD PROFESSOR(S)</b>	DI LORENZO ROSARIO Professore Ordinario Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	MARRA FRANCESCO Professore Ordinario Univ. di PALERMO PAOLO DI LORENZO ROSARIO Professore Ordinario Univ. di PALERMO
<b>CREDITS</b>	12
<b>PROPAEDEUTICAL SUBJECTS</b>	
<b>MUTUALIZATION</b>	
<b>YEAR</b>	1
<b>TERM (SEMESTER)</b>	2° semester
<b>ATTENDANCE</b>	Not mandatory
<b>EVALUATION</b>	Out of 30
<b>TEACHER OFFICE HOURS</b>	<p><b>DI LORENZO ROSARIO</b></p> <p>Monday 10:00 12:00 SAAF ed. 4, Ingr. H</p> <p>Tuesday 15:00 18:00 Sede CdL Viticoltura ed Enologia o piattaforma Teams</p> <p>Wednesday 10:00 12:00 SAAF ed. 4, Ingr. H</p> <p>Friday 10:00 12:00 SAAF ed. 4, Ingr. H</p> <p><b>MARRA FRANCESCO PAOLO</b></p> <p>Monday 09:00 11:00 Sede polo decentrato di Caltanissetta</p> <p>Tuesday 09:00 13:00 Ed. 4 H PT-98</p> <p>Thursday 09:00 13:00 Ed. 4 H PT-98</p>

DOCENTE: Prof. ROSARIO DI LORENZO

<b>PREREQUISITES</b>	In order to understand the content and the learning objectives of the course the student should have basic knowledge of general horticulture and viticulture
<b>LEARNING OUTCOMES</b>	<p>Knowledge and ability 'to understand</p> <p>The course aims to give at the students scientific and technical knowledge necessary to know the specificity of the viticulture and horticulture sector. The students will gain the knowledge needed to understand the possible response of the orchard to changes in environmental factors (eco-physiological aspects) and cultivation (management aspects). In particular, students will be able to understand the physiological processes that allow the grape and fruit trees varieties to tolerate / overcome / recover abiotic stress conditions (water stress, heat and bright) and the criteria for deciding if and how to intervene to help / interfere on some fundamental biological processes for the purpose of fruiting.</p> <p>Capacity 'to apply knowledge and understanding</p> <p>The course conveys the knowledge and skills needed to set up and run the grape and fruit orchard systems, according to the different production objectives and the different type of system. It also allows to understand with holistic approach the relationships between climate, biotic, cultural practices productivity 'and quality' of production and is a basic requirement to successfully apply the knowledge gained to the production world.</p> <p>Making judgments</p> <p>Be able to harmonize all production factors (environment, cultivars, crop management) and suggest innovative solutions to facilitate the best outcome of the production.</p> <p>Enable 'communicative</p> <p>The student, once acquired the specific technical vocabulary and being in possession of fundamental knowledge about the processes of vegetative and reproductive biology and agronomic requirements, He can advise managers and target the wine growers in the most' appropriate technical choices in order to the economic success of the crop.</p> <p>Capacity 'Learning</p> <p>Is expressed in acquiring the ability to relate the different factors that go into determining the productive results in the sector of fruit trees, wine and table grapes, adapting the choices to changing socio-economic conditions of the market, the destination of the product taking into account the most recent technical innovations that can contribute to the achievement of production targets.</p>
<b>ASSESSMENT METHODS</b>	<p>The Assessment method will be the oral exam. The student will have to answer at least two / three questions, on all parts of the program, with reference to the topics discussed in the lectures, in exercises, the textbooks and teaching materials provided by the teacher. Final assessment aims to evaluate whether the student has knowledge and understanding of the topics, has acquired interpretative competence and independence of judgment in concrete cases. Sufficiency will be reached when the student shows knowledge and understanding of Topics at least in general terms, and has minimal application expertise that can speak of table grapes and partial approach to the resolution of specific cases; It will also have presentation skills and argumentative as to allow the transmission of his knowledge to the examiner. Below this threshold, the examination will be insufficient. The more, however, the examinee with its argumentative and presentation skills can interact with the examiner, and the more his knowledge and application capabilities go into detail on the subject of discipline occurs, the more the assessment is positive.</p> <p>The assessment is carried out of thirty</p>
<b>TEACHING METHODS</b>	Lecture and vineyards tours and exercise in the field

## MODULE FRUIT FARMING

*Prof. FRANCESCO PAOLO MARRA*

### SUGGESTED BIBLIOGRAPHY

Appunti delle lezioni e materiale didattico distribuito dal docente.

testi:

-Monografie della collana "Coltura & Cultura" (melo, pero, pesco) edite da Bayer CropScience srl Milano

-Frutticoltura Speciale AAVV. Reda Ed.1991

-Nuove frontiere dell'arboricoltura italiana. A cura di S. Sansavini. 2007. Alberto Perdisa Editor

Physiological plant ecology - Walter Larcher – Springer, 2003

Jean-Claude Leclerc. Plant Ecophysiology. Science Publishers Inc, 2003.

<b>AMBIT</b>	50544-Discipline della produzione
<b>INDIVIDUAL STUDY (Hrs)</b>	90
<b>COURSE ACTIVITY (Hrs)</b>	60

### EDUCATIONAL OBJECTIVES OF THE MODULE

The course aims to provide basic knowledge to manage orchard systems with the description of the main cultivated fruit species, with special emphasis to the eco-physiological aspects and the response of systems with different degree of crop intensification. Each specie is described considering the botanical aspects, the relation with the environmental and cultural factors, reproductive and vegetative traits, the relevant cultivars and rootstocks. specific aspects of the cultural methodology are described for each specie and the most important final fruit quality characteristics will be listed. The student will 'then trained to use the information given to develop strategies and techniques to enhance agricultural productivity' and the quality of the fruits in sustainable systems based on deciduous fruit species (stone fruits, pome and Nuts).

## SYLLABUS

Hrs	Frontal teaching
1	Course Information. Objectives and structuring
14	Ecological requirements of the species (PEACH, APRICOT, PLUM, CHERRY, APPLE, PEAR, ALMOND, PISTACHIO, HAZELNUT, WALNUT): the agro-ecosystem; concepts of environmental suitability; water relations; roots water uptake; transpiration control and stomatal regulation; water status measures of the plants; stress conditions; photosynthesis; photosynthetic assimilation of C and assimilate partitioning; relationship between eco-physiology and assimilation of CO <sub>2</sub> ; carbohydrate catabolism and respiration; measurement techniques of gas exchange; climate changes.
6	phenoclimatic models; flowering and fruiting biology; fruiting and growing habit of the main deciduous species (stone fruit, pome fruit and nuts).
2	Orchard system configuration and bio-economic cycle: agronomic criteria for the rational choice of the training system in relation to the species
6	High and traditional orchard systems in dry hot environments: agronomic aspects; planting and crop management systems in greenhouse; control of the dormancy and the fruiting cycle
4	tree crop management: pruning and fruit load adjustment
6	tree crop management: irrigation and water management; stress and water deficit; irrigation methods
4	Tree crop management: mineral nutrition; leaf diagnosis, fertilization techniques: fertigation.
2	Soil management, cover crops
2	Cultivar: classification and selection
2	Rootstocks: genetic and agronomic characteristics
Hrs	Practice
9	field trip in commercial farms to experience the main production and cultivation problems in Sicily
Hrs	Workshops
2	Ripeness, Harvest handling, Maturity index for fruits

**MODULE  
WINE GROWING**

*Prof. ROSARIO DI LORENZO*

**SUGGESTED BIBLIOGRAPHY**

Fregoni M., *Viticultura di qualita*. Ed. Fregoni, 1998;  
 Autori Vari: *La Vite e il vino* BayerCropScience, 2007;  
 Materiale didattico fornito dal Docente

<b>AMBIT</b>	50544-Discipline della produzione
<b>INDIVIDUAL STUDY (Hrs)</b>	90
<b>COURSE ACTIVITY (Hrs)</b>	60

**EDUCATIONAL OBJECTIVES OF THE MODULE**

The course has the purpose to provide the general theoretical and practical knowledge necessary for the creation and management of "vineyard" systems, in relation to different production targets. Specific objectives of the course are: the study of genetic, environmental, cultural and related interactions in the production results; the management of summer and winter pruning; the choice of trellis system and pruning systems, to evaluate and manage the source-sink relationships, the balance between vegetation and production, and the yield-quality ratio in the vineyard.

**SYLLABUS**

<b>Hrs</b>	<b>Frontal teaching</b>
1	Objectives of the discipline and its division and articulation
6	Life cycle; annual cycle, vegetative and reproductive stages; biology of flowering and fruiting.
4	Soil preparation. The propagation material choice. Criteria for rootstock and variety selection. National and Regional profile of the varieties and rootstocks allowed for cultivation in Italy.
5	Vine ecology: site selection; relations climate-soil and biological factors (variety and rootstock) and agronomic (crop technique) of grape production; bio-climatic indices
8	Viticultural technique: "vineyard" system in modern viticulture. Classification and description of the trellis and pruning systems selection criteria. Interrow and inrow spacing. Physiological basis of pruning in viticulture: training and production pruning
8	Balance vegetation/production, source-sink relations (interaction and competition), the optimization of functionality and efficiency of the "vineyard" system. Description and operational issues of the of summer and winter pruning in viticulture
4	Bio-agronomical discussion of mechanical harvest and mechanical pruning
4	Soil management; weeding, mulching, grassing and cover crops selection
10	Water managemet techniques: quantity and times of irrigation. Fertigation: techniques, doses and timing
<b>Hrs</b>	<b>Practice</b>
10	Vineyards tours and exercise in the field