



UNIVERSITÀ DEGLI STUDI DI PALERMO

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| DEPARTMENT | Scienze Agrarie, Alimentari e Forestali |
| ACADEMIC YEAR | 2019/2020 |
| MASTER'S DEGREE (MSC) | AGRICULTURAL PRODUCTIONS AND TECHNOLOGIES |
| SUBJECT | FRUIT FARMING |
| TYPE OF EDUCATIONAL ACTIVITY | B |
| AMBIT | 50544-Discipline della produzione |
| CODE | 19948 |
| SCIENTIFIC SECTOR(S) | AGR/03 |
| HEAD PROFESSOR(S) | MARRA FRANCESCO Professore Ordinario Univ. di PALERMO PAOLO |
| OTHER PROFESSOR(S) | |
| CREDITS | 6 |
| INDIVIDUAL STUDY (Hrs) | 90 |
| COURSE ACTIVITY (Hrs) | 60 |
| PROPAEDEUTICAL SUBJECTS | |
| MUTUALIZATION | |
| YEAR | 1 |
| TERM (SEMESTER) | 2° semester |
| ATTENDANCE | Not mandatory |
| EVALUATION | Out of 30 |
| TEACHER OFFICE HOURS | MARRA FRANCESCO PAOLO Monday 09:00 11:00 Sede polo decentrato di Caltanissetta Tuesday 09:00 13:00 Ed. 4 H PT-98 Thursday 09:00 13:00 Ed. 4 H PT-98 |

DOCENTE: Prof. FRANCESCO PAOLO MARRA

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| PREREQUISITES | In order to understand the content and the learning objectives of the course the student should have basic knowledge of general horticulture |
| LEARNING OUTCOMES | Knowledge and ability 'to understand The course aims to give at the students scientific and technical knowledge necessary to know the specificity of the 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 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. Capacity 'to apply knowledge and understanding The course conveys the knowledge and skills needed to set up and run the 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. Making judgments Be able to harmonize all production factors (environment, cultivars, crop management) and suggest innovative solutions to facilitate the best outcome of the production. Enable 'communicative 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. Capacity 'Learning Is expressed in acquiring the ability to relate the different factors that go into determining the productive results in the sector of fruit trees, 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. |
| ASSESSMENT METHODS | 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 fruit trees 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. The assessment is carried out of thirty |
| EDUCATIONAL OBJECTIVES | 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). |
| TEACHING METHODS | Lecture and field trip in commercial farms en experimental orchards |
| 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. |

SYLLABUS

| Hrs | Frontal teaching |
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| 1 | Course Information. Objectives and structuring |

SYLLABUS

| Hrs | Frontal teaching |
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| 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 ₂ ; 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 |
| 4 | 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 |
| 4 | Ripeness, Harvest handling, Maturity index for fruits |