

Course Unit	Fruticulture		Field of study	Animal and Agricultural Productions	
Bachelor in	Agronomic Engineering		School	School of Agriculture	
Academic Year	2022/2023	Year of study	3	Level	1-3
Type	Semestral	Semester	2	ECTS credits	6.0
Code	9086-307-3203-00-22				
Workload (hours)	162	Contact hours	T 30	TP -	PL 30
			TC -	S -	E -
			OT 20	O -	

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Manuel Ângelo Rosa Rodrigues

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. To know the edapho-environmental requirements of individual tree species and cultivars.
2. To master the techniques of propagation used in each fruit species, as well as to know the response of rootstock to the environment and its effect on the commercial cultivars.
3. To know the principles of cultivation of the main fruit species and cultivars
4. To understand the major aspects related to the installation of an orchard and be able to program its installation.
5. To know the methods and be able to train an orchard. To be able to prune and to know the response of different species to pruning, according to the soil type, rootstock and training system.
6. To understand the irrigation, nutritional and ground management needs of an orchard and to understand their effects on crop yield, fruit quality and phytosanitary problems.
7. To be able to determine the harvesting date. To know the specific needs of packaging and transport and the methods of conservation.

Prerequisites

Before the course unit the learner is expected to be able to:

Knowledge of botany, plant physiology, soil and fertility, general agriculture and fruit trees

Course contents

Economic and social importance of fruit trees (apple, pear, sweet and sour cherry, peach and kiwi). Main botanical aspects, ecological adaptation, rootstocks and varieties, installation of the orchard, cultivation techniques (training and pruning, soil management, fertilization, irrigation, crop protection, thinning of fruits and flowers). Determination of the harvest date, conservation techniques and fruit diseases during conservation.

Course contents (extended version)

1. Study of pome fruits (apple and pear), stone fruits (peach, cherry) and actinides (Kiwis)
 - History, evolution and current economic and social importance of fruit species
 - Botanical and morphological characterization.
 - Agroecological adaptation of rootstocks and commercial varieties
 - Orchard installation.
 - Commercial characterization of rootstocks and varieties
 - Training systems and pruning
 - Soil management, crop nutritional needs and fertilization
 - Estimation of water needs and irrigation techniques
 - Crop protection
 - Harvesting and fruit diseases during conservation
2. Organic farming in fruit growing: potential and limitations

Recommended reading

1. Fernandez, R. E. 1988. Planificación y diseño de plantaciones frutales. Mundi. 205 pp.
2. Grisvard, P. 1989. La poda de los Árboles Frutales-Peral, Manzano. Mundi-Prensa. 127 PP.
3. Masseron, A. & Trollet, M. 1991. Le poirier. CTIFL. 217 pp.
4. Velard, F. G. A. 1989. Tratado de Arboricultura Frutal, Vol II. Mundi-Prensa. 236 pp.
5. Srivastava AK, Hu C (2020) Fruit crops. (Eds). Elsevier, The Netherlands

Teaching and learning methods

Introduction of theoretical contents by using audio-visual equipment and blackboard. Practical classes in the IPB orchards and greenhouses. Installation of experimental protocols, and sample collection and processing. Seminar preparation, from experimental results and bibliographical searching. Results presentation as written reports and oral communications. Technical study visits or field trips.

Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final)
 - Final Written Exam - 50% (Written exam on theoretical content)
 - Practical Work - 50% (Continuous evaluation. Worker-students can be evaluated in the date of the final exam.)
2. Alternative 2 - (Regular, Student Worker) (Supplementary)
 - Final Written Exam - 50% (Written exam on theoretical content)
 - Practical Work - 50% (Continuous evaluation. Worker-students can be evaluated in the date of the final exam.)
3. Alternative 3 (worker-students) - (Student Worker) (Special)
 - Final Written Exam - 50% (Written exam on theoretical content)
 - Practical Work - 50% (Continuous evaluation. The students can fulfil this component simultaneously with the written exam.)
4. Alternative 4 (finalist students) - (Regular, Student Worker) (Special)
 - Final Written Exam - 50% (Written exam on theoretical content)
 - Practical Work - 50% (Continuous evaluation. The students can fulfil this component simultaneously with the written exam.)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

Manuel Ângelo Rosa Rodrigues	José Alberto Cardoso Pereira	Albino António Bento	José Carlos Batista Couto Barbosa
05-12-2022	05-12-2022	09-12-2022	09-12-2022