Course Unit	Viticulture and Viticulture Ecology			Field of study	Agricultural and Animal Production								
Bachelor in	Oenology			School	School of Agriculture								
Academic Year	2022/2023	Year of study	2	Level	1-2	ECTS credits	6.0						
Type	Semestral	Semester	2	Code	9998-705-2206-00-22								
Workload (hours)	162	Contact hours	T 30	TP -	PL -	TC 30	S -	E -	OT 4	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): Albino António Bento, António Castro Ribeiro

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Plan and carry out the main operations for the installation of a vineyard
2. Know the pruning and training systems and understand the yield/quality ratios according to crop load.
3. Know the climatic requirements and the influence of the main climatic elements on the physiology and biological cycle of the grapevine
4. Know how to perform green pruning, its opportunity and the implications on the behavior of the grapevine, diseases and pests and maturation.
5. Know how to perform the various soil management and irrigation practices in the vineyard.

Prerequisites

Not applicable

Course contents

Vineyard Establishment; Prunning and training systems; Viticultural environment and climate change; Grapevine ecophysiology; Soil management; Summer pruning; Grapevine water relations and irrigation.

Course contents (extended version)

1. Vineyard establishment
   - Preparation of the soil
   - Land leveling
   - Fertilization
   - Laying out the vineyard: line orientation, vine spacing and planting density
   - Selection of rootstocks and varieties
   - Planting
   - Cultural practices after planting
   - Support structures
2. Prunning and training systems
   - Objetives and principles of pruning
   - Training young vines and pruning
   - Yield components
   - Crop load: yield / quality ratios
   - Mechanical pruning
   - Training systems
3. Viticultural environment
   - Climatic requirements for grapevive cultivation
   - Influence of the main climatic factors in the biological cycle of the grapevine
   - Evaluation of climate characteristics for grapevine cultivation. Bioclimatic indices
   - Climate change impact on grapevine cultivation
   - Influence and limitations imposed by soil on grapevine cultivation
   - Viticultural zoning
4. Grapevine ecophysiology
   - Leaf gas Exchange: Influence of environmental factors and water status and leaf age.
   - Allocation and partitioning of photosynthates: source / sink relationships
   - Canopy microclimate
5. Soil management
   - Tillage
   - Cover crops
   - Herbicide application
   - Soil erosion control
6. Summer pruning
   - Head sukering/undesired shoots removal
   - Shoots orientation
   - Topping of growing shoots
   - Leaf removal
   - Cluster thinning
   - Summer pruning and control of grapevine pests and diseases
7. Grapevine water relations and irrigation
   - Grapevine water relations
   - Tools and methods to assess soil water content and grapevine water potential
   - Grapevine irrigation requirements
   - Vineyard irrigation management strategies: deficit irrigation and grapevine water stress management
   - Irrigation methods

Recommended reading

1. Castro; R. Cruz. A. ; Botelho; M. 2015. Manual de Sistemas de condução da vinha. BayVitis, Carnaxide.
2. Hidalgo, L. 2003. Poda de la vid. Edicões Mundi-Prensa, Madrid.
3. Hidalgo, L. 2011. Tratado de Viticultura (2 Vols), Edições Mundi-Prensa, Madrid.
4. Keller, M. 2015. The science of grapevine. Academic Press, Second Edition, Elsevier, UK.
5. Magalhães, N. 2015. Tratado de Viticultura. A Videira, A Vinha e o Terroir , Esférica Poética. Lisboa.

Teaching and learning methods

Lectures: oral presentation. Lab sessions: vineyard establishing exercises, determination of bioclimatic indexes and vineyard irrigation requirements Field sessions: observation vine phenology; winter and summer pruning practices; technical visits to surrounding vineyards to observe soil preparation and vine planting, pruning and training systems, soil management practices and irrigation methods.

Assessment methods

1. Alternativa 1 - (Regular, Student Worker) (Final, Supplementary, Special)
   - Practical Work - 40% (Minimum mark: 9, 5 (0-20))
   - Intermediate Written Test - 60% (Minimum mark: 9, 5 (0-20))
2. Alternative 2 - (Regular, Student Worker) (Final, Supplementary, Special)
   - Final Written Exam - 100% (The final exam includes the practical component)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

Albino António Bento, António Castro Ribeiro	João Luís Verdial Andrade	António Castro Ribeiro	José Carlos Batista Couto Barbosa
29-12-2022	29-12-2022	31-12-2022	02-01-2023