



MCAST

Malta College of Arts, Science & Technology

MQF Level 3

Diploma in Horticulture

AG3-03-18

Course Description

This course provides an introduction to the basics of crop cultivation. The student will develop the knowledge and practical skills needed to work on a modern horticultural farm.

Practical sessions form an integral part of the course, providing the student with the required skills and competences to cultivate plants and manage plant production.

This experience will improve employment opportunities and is a good foundation for future career opportunities such as working in nurseries, farms and greenhouses, as well as for progression to a more advanced qualification.

Programme Learning Outcomes

At the end of the programme the students are able to

1. *Understand the biology of plants;*
2. *Describe and discuss the basic principles of plant and soil science;*
3. *Grown and maintain a variety of horticultural plants;*
4. *Follow a practical training work placement programme in the horticultural sector.*

Entry Requirements

- MCAST Foundation Certificate; or
- 2 SEC/O-Level/SSC&P (level3) passes. Preferred L Biology and English Language
- A full “Secondary School Certificate and Profile” (SSC&P) at Level 2 will be accepted in lieu of one (1) O-Level pass

Current Approved Programme Structure

Unit Code	Unit Title	ECVET/ECTS
ASHRT-303-1403	Basics of Horticultural Technology	3
ASHRT-306-1401	Plant and Soil Science	6
ASHRT-306-1402	General Horticulture	6
ASHRT-306-1404	Vegetable Production	6
ASHRT-306-1405	Fruit, Olive and Grapevine Production	6
ASHRT-306-1406	Ornamental Plants and Grasses Production	6
ASAPC-303-1401	Apiculture	3
CDKSK-304-1921	Mathematics	4
CDKSK-304-1922	English	4
CDKSK-304-1923	Malti	4
CDKSK-304-1924	Information Technology	4
CDKSK-304-1913	Individual and Social Responsibility	4
CDKSK-304-1925	Science	4
ASHRT-300-1603	Practical*	0
Total ECVET/ECTS		60

*Learners following this programme need to also follow a practical component which is not accredited. This is assessed on a pass/fail basis, and is shown also on the final transcript.

Unit: ASHRT-303-1403 - Basics of Horticultural Technology

Unit level (MQF): 3

Credits: 3

Unit Description

This unit will acquaint learners with horticultural mechanisation and equipment. Learners will learn about tools, machines and equipment used in different phases of horticultural production - such as soil tillage, seeding and planting, plant protection and plant care, harvesting and picking, and transportation.

Learners will also have the opportunity for hands-on learning in order to acquire necessary skills for working in the horticultural sector.

Special attention will be given to safety procedures at work and the utilisation of safety equipment.

Learners will also be introduced to structures and equipment used for protecting plants from negative atmospheric factors.

Learning Outcomes

On completion of this unit the student will be able to:

1. *Describe common soil tillage tools and attachments;*
2. *Understand the principles of seeding, planting and harvesting equipment in horticulture;*
3. *Describe the equipment for plant care and plant protection against pests and pathogens;*
4. *Understand the common problems that might arise with a range of machines/equipment.*

Unit: ASHRT-306-1401 - Plant and Soil Science

Unit level (MQF): 3

Credits: 6

Unit Description

Horticulture is the science, technology and business involved in the cultivation of fruit, vegetables, grapevines, olives, and other similar varieties.

Horticulture is one of the most popular sectors of Agribusiness in the Mediterranean. In fact, in some countries, this sector makes up a relatively high share of a country's GDP, and in some cases, the products are even recognised as national brands. Among these are olive oils, citruses and wine.

In this unit the learners' will enhance their knowledge on plant taxonomy and the division of the Plant Kingdom. In addition, learners will also be able to name the important plants, in t Maltese, English and Latin.

Learners will be introduced to plant morphology, anatomy basic plant genetics and palynology. In this unit learners will also understand the basics of plant physiology and the basic properties of plant production. In addition, learners will become familiar with the common soil types, the basics of soil sampling and simple soil analysis techniques.

Therefore, with the knowledge gained in this unit learners will be able to understand, the different needs of plants, plant behaviour and the reactions of plants to given care.

Learning Outcomes

On completion of this unit the student will be able to:

1. *Describe the main morphological and anatomic traits of the most common horticultural plants;*
2. *Understand the basic concepts of genetics and how these are applied to plant science;*
3. *Describe the main processes of plant physiology;*
4. *Understand the purpose and methods used for soil analysis;*
5. *Understand the soil factors which contribute to healthy plant growth.*

Unit: ASHRT-306-1402 - General Horticulture

Unit level (MQF): 3

Credits: 6

Unit Description

This unit will give learners general knowledge and information common to different horticultural productions. Learners will be introduced to different aspects of plant nutrition mainly plant feeds, fertilisers and fertilisation, plant nutritive elements and influencing factors that affect plant growth and health. Learners will also explore the climatic aspects that effect horticulture as well as the limitations in production and the protection of plants. Basic soil cultivation techniques in plant production will also be investigated. Different horticultural systems such as open field and greenhouse production systems and conventional systems which are less invasive to the environment and will be explored. Learners will also be exposed to an introduction to hydroponics. Irrigation systems will be discussed focusing on the quality and quantity of irrigation water, fertiliser irrigation and other irrigation systems. Basic plant propagation; production of seed and seedlings and the production of grafts will be explored. Learners will also be introduced to safety at work with tools and equipment used in the practical part of learning.

Learning Outcomes

On completion of this unit the student will be able to:

1. *Understand different plant needs for different nutrients;*
2. *Explain specific nutritive values of different fertilising agents;*
3. *Describe soil cultivation techniques and adequate equipment;*
4. *Explain main features of different horticultural production systems;*
5. *Explain plant propagation techniques for different plants.*

Unit: ASHRT-306-1404 - Vegetable Production

Unit level (MQF): 3

Credits: 6

Unit Description

The main aim of this unit is to enhance the knowledge learners have attained in the units Plant Science, General Horticulture and Basics of Horticultural Technology.

In this unit learners will become familiar with the most common vegetable crops and their production, namely, leafy vegetables such as lettuce, cabbages, and spinach, fruit vegetables such as tomatoes, peppers, aubergines, and courgettes legumes such as beans and peas, flower vegetables such as cauliflower, broccoli and globe artichoke as well as underground crops such as potatoes and carrots.

For each of the above kind of crops, learners will be introduced to their origin and history, the economic and nutritional value of the plant and its requirements for different nutritional elements such as water and appropriate climate conditions.

In addition, learners will understand the plant's specific morphology, physiology and genetics. Plant-specific pathology, prevention and treatment of different diseases will also be tackled in this unit.

Learners will also enhance their knowledge of plant propagation, standard plant care procedures, and harvesting, storing and quality standards.

Learning Outcomes

On completion of this unit the student will be able to:

1. *Describe the origin, economic significance and nutritional value of the main vegetable crops in Malta;*
2. *Describe the morphological features and main organs of different vegetables;*
3. *Understand the specific nutrients, water and climate requirements for different group of vegetables;*
4. *Understand the basic plant pathology and treatment for different groups of vegetables;*
5. *Explain the propagation, care and harvesting requirements for different group of vegetables.*

Unit: ASHRT-306-1405 - Fruit, Olives and Grapevine Production

Unit level (MQF): 3

Credits: 6

Unit Description

The aim of this unit is to deepen the knowledge obtained from the following units: Plant Science, General Horticulture and Basics of Horticultural Technology. Learners will gain applied knowledge about common trees and their production, namely of citruses, stone fruit, olive and grapevine.

This unit will give learners the opportunity to explore the origin and history of plants and their economic and nutritional values, together with an introduction to dendrology. Learners will learn about different production aspects with a special focus on plant propagation and plant requirements for nutritional elements, water and climate conditions. Plant-specific pathology, prevention and treatment together with standard plant care procedures will also be explored. Learners will be familiarised with harvesting, storing and quality standards.

In addition, learners will be introduced to the forming of crowns, as well as to specific requirements on grafting, pruning and/or disbudding.

For olive and grapevine, learners will be informed about the most important varieties and their features crucial for processing.

Learning Outcomes

On completion of this unit the student will be able to:

- 1. Describe the anatomy, morphology and annual cycles of a range of woody plants;*
- 2. Understand specific nutritional, water and climate requirements for each group of trees;*
- 3. Understand basic plant pathology and treatment for different groups of trees;*
- 4. Explain plant propagation techniques;*
- 5. Describe basic pruning and training regimes.*

Unit: ASHRT-306-1406 - Ornamental Plants and Grasses Production

Unit level (MQF): 3

Credits: 6

Unit Description

The goal of this unit is to enhance the knowledge attained in units: Plant Science, General Horticulture and Basics of Horticultural Technology. Learners will gain develop skills in ornamental plants and grasses production.

Learners will learn about different aspects of ornamental plants. They will learn about the origin and history of plants, and their economic and nutritional value. Learner will be aware of plant requirements regarding nutritional elements, water and climate conditions as well as plant-specific pathology, prevention and treatment.

Learners will be acquainted with plant-specific morphology, physiology, genetics, plant propagation, nursery production, standard plant care procedures and procedures for harvesting and storing as well as quality standards.

Learners will be introduced to planting and forming of crowns of woody plants, and in regards to the following topics, to specific requirements for grafting, pruning and/or disbudding.

Learning Outcomes

On completion of this unit the student will be able to:

- 1. Describe the main morphological features of the most common ornamental plants and grasses;*
- 2. Understand specific nutritional, water and climate requirements for different species of ornamental plants and grasses;*
- 3. Explain plant propagation techniques for a range of ornamental plants and grasses;*
- 4. Explain value chains of plant nurseries;*
- 5. Describe the production methods employed by plant nurseries.*

Unit: ASAPC-303-1401 - Apiculture

Unit level (MQF): 3

Credits: 3

Unit Description

Beekeeping is an agricultural industry having a positive impact on flowering plants. The honey bee is primarily kept for the production of honey and related by-products. The aim of this unit is to enhance knowledge gained in the units Animal Science, General Animal Husbandry and Basics of Animal Care Technology in relation to apiculture.

This unit will familiarise learners with the particularities of beekeeping. The unit will look at the history of beekeeping, the significance and use of honeybee products and the impact of honeybees on flower pollination.

This unit will also look at specific honeybee morphology, reproduction, diseases, disorders and their treatments. Importance will be given to the role of the honeybee in fighting against the Varroa mite. Since honeybees gather and live in colonies, a special emphasis will be given to different members of the colony, the structure of the colony and the hierarchy of the colony.

Requirements for beekeeping in terms of feed, water and climate conditions will be discussed. The unit will also introduce learners to the basics of honeybee housing, handling techniques and ways of transportation. Learners will also be exposed to standard techniques in beekeeping which include observing and inspecting colonies and hives, preventing swarming, maintaining hives and frames, and harvesting of honey.

Learning Outcomes

On completion of this unit the student will be able to:

1. *Recognise the ecological and economic importance of beekeeping;*
2. *Understand the honey bee morphology, reproduction and digestion;*
3. *Describe the honey bee colony structure and hierarchy;*
4. *Describe the standard techniques in taking care of honey bee colonies.*