



**L-Università
ta' Malta**

**MATSEC
Examinations Board**



SEAC 07 Syllabus

Agribusiness

2024

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**SEAC07 Agribusiness
Syllabus Addendum**

Updates for the 2024 MATSEC Examinations Session

Changes in Subject Content	Content of Unit 3 K3 , C1 and A2 may not be covered.
Changes in Coursework	All criteria in Unit 3 (including those highlighted for the Controlled assessment), except for K3 , C1 and A2 , will be assessed in Assignment 1 and Assignment 2.
Changes in Exam Paper(s)	The Unit 3 Controlled assessment (Assignment 3) will not be carried out. K3 , C1 and A2 will not be assessed and these will be prorated at the end of the unit based on the combined performance in knowledge and comprehension criteria, and application criteria respectively, within the same unit.

Table of Contents

Introduction	3
Part A: General Policies.....	4
Introduction.....	4
Programme Learning Outcomes.....	4
Unit Learning Outcomes	4
Programme Descriptors	6
Overview	6
Definitions/Terminology	8
Assessment Scope.....	9
Quality Assurance.....	9
Part B: Unit Specifications	10
Introduction.....	10
Interpreting the Unit Specifications.....	10
Unit 1: Working in a Pet Shop and Plant Nursery Environment	12
Learning Outcomes.....	12
Unit Content	13
Learning Outcomes and Assessment Criteria	17
Assessment Criteria	21
Scheme of Assessment	21
Distribution of Marks.....	21
Unit 2: Taking Care of Plants and Animals	22
Learning Outcomes.....	22
Unit Content	23
Learning Outcomes and Assessment Criteria	27
Assessment Criteria	30
Scheme of Assessment	30
Distribution of Marks.....	30
Unit 3: Plant and Animal Production	31
Learning Outcomes.....	31
Unit Content	32
Learning Outcomes and Assessment Criteria	37
Assessment Criteria	40
Scheme of Assessment	40
Distribution of Marks.....	40
Appendix 1 – Minimum required resources	41

Introduction

The aim of this learning and assessment programme is to assist secondary schools to manage applied vocational programmes, specifically in the planning and implementation of the programme delivery.

This learning and assessment programme is structured in two parts, namely:

Part A: General Policies

Part B: Unit Specifications

In Part A, the Learning Outcomes of the programme are explained. Important terms used in the Learning and Assessment Programme (LAP) are defined.

In Part B, the content to be covered in each unit is provided. The learning outcomes together with a brief description are also specified. The assessment criteria together with the scheme of assessment are presented in this part of the document.

In order to ensure effective implementation of the programme, adequate standards, quality assurance processes and procedures have to be adopted. Additionally, policies, guidelines and strategies related to assessment practices are documented in the SEAC Vocational Subjects Policy Document. Standard templates will also be provided and will be structured as follows:

List of Templates
Teacher's Timeframe
Assignment Brief Front Sheet
Record of Internal Verification – Assignment Brief
Record of Internal Verification – Assessment Decision
External Verification Report Template
Unit Tracking Sheet Template

Part A: General Policies

Introduction

The aim of the applied vocational programme in Agribusiness is to provide candidates with the underpinning knowledge related to the subject. By the end of the programme, candidates are expected to have gained sufficient skills and knowledge and be able to apply them.

Programme Learning Outcomes

At the end of the programme, I can:

- Produce plants using different propagation techniques.
- Plan sustainable embellishing activities.
- Conduct tasks that involve construction and maintenance for embellishing purposes.
- Undertake cultivation of seasonal and permanent crops.
- Accomplish jobs needed to setup and maintain healthy fish tanks.
- Undertake tasks in aquarium construction and aquascaping according to given specifications.
- Care for avian and mammalian pets.
- Perform basic animal health assessment and animal grooming.
- Breed commercial rabbits and poultry.
- Conduct stock taking procedures.
- Perform elementary beekeeping tasks.

Unit Learning Outcomes

Unit 1: Working in a Pet Shop and Plant Nursery Environment

At the end of the unit, I can:

- LO 1.** Follow procedures for basic plant production.
- LO 2.** Propagate plants using different methods.
- LO 3.** Undertake proper fish keeping tasks to maintain a healthy fish tank.
- LO 4.** Meet the basic needs of an avian and a mammalian pet.
- LO 5.** Follow procedures to record stock of an agribusiness enterprise.

Unit 2: Taking Care of Plants and Animals

At the end of the unit, I can:

- LO 1.** Embellish a sustainable garden area over a period of time.
- LO 2.** Follow correct procedures to prune plants.
- LO 3.** Assemble an aquascaped aquarium.
- LO 4.** Undertake basic animal grooming procedures in a controlled environment.
- LO 5.** Conduct a basic animal health assessment.

Unit 3: Plant and Animal Production

At the end of the unit, I can:

- LO 1.** Cultivate a range of crops from seed to harvest.
- LO 2.** Apply a suitable fertiliser using the appropriate technique.
- LO 3.** Conduct basic apicultural practices.
- LO 4.** Use adequate measures for healthy rabbit and poultry growth.
- LO 5.** Conduct a breeding programme for rabbits and poultry.

Programme Descriptors

Programme descriptors are understood as outcome statements of what a candidate is expected to have achieved by the end of the programme. These are an adaptation of MQF level descriptors for the specific programme.

Overview

MQF Level 1	MQF Level 2	MQF Level 3
<p>Basic general knowledge.</p> <ol style="list-style-type: none"> 1. Acquires basic general knowledge related to management of crops, landscaping, fish, bees, pets and farm animals and expresses the application of a variety of simple tools and context as an entry point to lifelong learning; 2. Knows and understands the steps needed to complete simple tasks and activities in situations related to agribusiness environments; 3. Is aware and understands basic tasks and instructions related to activities in agribusiness; 4. Understands basic textbooks, manuals and other information related to crop, garden, fish and animal husbandry and health. 	<p>Basic factual knowledge of a field of agribusiness.</p> <ol style="list-style-type: none"> 1. Possess good knowledge of the three fields of agribusiness – crops, landscaping, fish, bees, pets and farm animals; 2. Is aware and interprets type of information and ideas within agronomic, aquaculture, apiculture, elementary pet nursing and animal management systems; 3. Understands facts and procedures in the application of basic tasks and instructions related to a situation of an agribusiness nature; <p>Selects and uses relevant knowledge to accomplish specific actions for self and others, in terms of safety and proper handling of a task.</p>	<p>Knowledge of facts, principles, processes and general concepts in a field of agribusiness.</p> <ol style="list-style-type: none"> 1. Understands the relevancy of theoretical knowledge and information related to crops, landscaping, fish, bees, pets and farm animals; 2. Assesses, evaluates and interprets facts, establishing basic principles and concepts in tasks related to agribusiness; 3. Understands facts and procedures in the application of more complex tasks and instructions related to a situation of an agribusiness nature; <p>Selects and uses relevant knowledge acquired on one's own initiative to accomplish specific actions for self and others, in terms of safety and proper handling of a task in normal practice and in case of an unexpected situation.</p>

MQF Level 1	MQF Level 2	MQF Level 3
<p>Basic skills required to carry out simple tasks.</p> <ol style="list-style-type: none"> 1. Has the ability to apply basic knowledge and carry out a limited range of simple tasks related to the management of crops, landscaping, fish, bees, pets and farm animals; 2. Has basic repetitive communication skills to complete well defined routine tasks and identifies whether actions have been accomplished; 3. Follows instructions and be aware of consequences of basic actions for self and others, in terms of safety and proper handling of a task in normal agribusiness practice. 	<p>Basic cognitive and practical skills required to use relevant information in order to carry out agribusiness tasks and to solve routine problems using simple rules and tools.</p> <ol style="list-style-type: none"> 1. Has the ability to demonstrate a range of skills by carrying out a number of complex tasks within the fields of agribusiness, namely – crops, landscaping, fish, bees, pets and farm animals s; 2. Communicates basic information related to the management of crops, landscaping, fish, bees, pets and farm animals; 3. Ensures agribusiness tasks are carried out effectively taking into account acquired knowledge and safety guidelines. 	<p>A range of cognitive and practical skills required to accomplish agribusiness tasks and solve problems by selecting and applying basic methods, tools, materials, and information.</p> <ol style="list-style-type: none"> 1. Demonstrates a range of developed skills to carry out more than one complex task effectively and in unfamiliar and unpredictable contexts taking into account safety rules and procedures; 2. Communicates more complex information related to the management of crops, landscaping, fish, bees, pets and farm animals; 3. Solves basic agribusiness problems by applying basic methods, tools, materials and information given in a restricted learning environment.
<p>Work out or study under direct supervision in a structured context.</p> <ol style="list-style-type: none"> 1. Applies basic knowledge and skills to do simple, repetitive and familiar tasks related to crops, landscaping, fish, bees, pets and farm animals; 2. Participates in and takes basic responsibility for the action of simple agribusiness tasks; 3. Activities are carried out under guidance and within simple defined timeframes; 4. Acquires and applies basic key agribusiness competences at this level. 	<p>Work or study under supervision with some autonomy.</p> <ol style="list-style-type: none"> 1. Applies factual knowledge and practical skills to do some structured tasks related to crops, landscaping, fish, bees, pets and farm animals; 2. Ensures one acts pro-actively in the management of agribusiness systems; 3. Carries out activities under limited supervision and with limited responsibility in a quality controlled context; 4. Acquires and applies basic key agribusiness competences at this level. 	<p>Take responsibility for completion of tasks in agribusiness and adapt own behaviour to circumstances in solving problems.</p> <ol style="list-style-type: none"> 1. Applies knowledge and skills to do some tasks systematically; 2. Adapts own behaviour to circumstances in solving problems by participating pro-actively in structured learning environments in the management of agribusiness systems; 3. Uses own initiative with established responsibility and autonomy, but is supervised in quality controlled learning environments, normally in a trade environment; 4. Acquires key agribusiness competences at this level as a basis for lifelong learning.

Definitions/Terminology

Term	Definition
Assessment Criteria	A description of what a candidate is expected to do in order to demonstrate that a learning outcome has been achieved.
Assessor	The person responsible to grade the candidate's work, issue a mark and determine the candidate's final grade.
Competences	Each competence is defined as a combination of knowledge and skills and is associated with the level of autonomy and responsibility that the person is expected to have at that level.
Controlled Assessment	An assessment set by MATSEC which may include written and/or practical tasks as specified in the syllabus. This may be a take-home assessment or carried out under controlled conditions.
Coursework	A number of assignments set by teachers and given to the candidate during the course as specified in the syllabus.
Knowledge	Knowledge refers to the understanding of basic, factual and theoretical information, which is traditionally associated with formal learning but can also be acquired from informal and non-formal learning.
Learning Outcome	Learning Outcomes are statements which describe what a qualification represents in terms of knowledge, skills and competences. The Malta Qualifications Framework (MQF) defines a learning outcome as what the candidate understands and is capable of doing at the end of the learning process.
Malta Qualification Framework	The Malta Qualifications Framework (MQF) provides an indication of the level of difficulty as a benchmark for a qualification, which needs to be assigned a level and mapped to the framework. The MQF has level descriptors from Level 1 to 8. The level descriptors are useful for education and training providers as they describe the Knowledge, Skills and Competences and a set of Learning Outcomes, which indicate to the candidate the end of a learning process.
Quality Assurance	A continuous process to assure the standards and quality of the learning assessment programme.
Sample of Work	A sample of work is a percentage of the candidate's work gathered as a representative sample for the internal or external verifier.
Skills	Skills imply the application of acquired knowledge and understanding in different contexts. A skill may be the result of formal learning or of repetitive work in an informal setting.
Synoptic Assessment	An assessment in the form of a written examination and conducted under controlled conditions covering all learning outcomes and the majority of Knowledge and Comprehension assessment criteria in a given unit.
Unit Content	The unit content is the content required to be communicated and given to the candidate per learning outcome. Each learning outcome must have content related to it, which content must be delivered to provide the candidate with the tools necessary to achieve that outcome.

Assessment Scope

Assessment is an important element in any learning process. This should inform candidates about their achievements and at the same time it should meet important conditions of reliability, validity and fairness. Thus, important rules and procedures must be adhered-to. In particular, the assessment regulations and procedures that are explained in this section will ensure that assessments are:

- Of the required standard, quality and level;
- Fair for all candidates;
- Valid and reliable.

Each unit will be assessed through three assignments. The assessment mode/type, criteria to be assessed and the distribution of marks are explained in Part B of the programme as part of the unit specifications.

Quality Assurance

An important aspect of this programme is the quality assurance process that must be conducted throughout the implementation of the programme. Three main processes are to be conducted as stipulated in the table below.

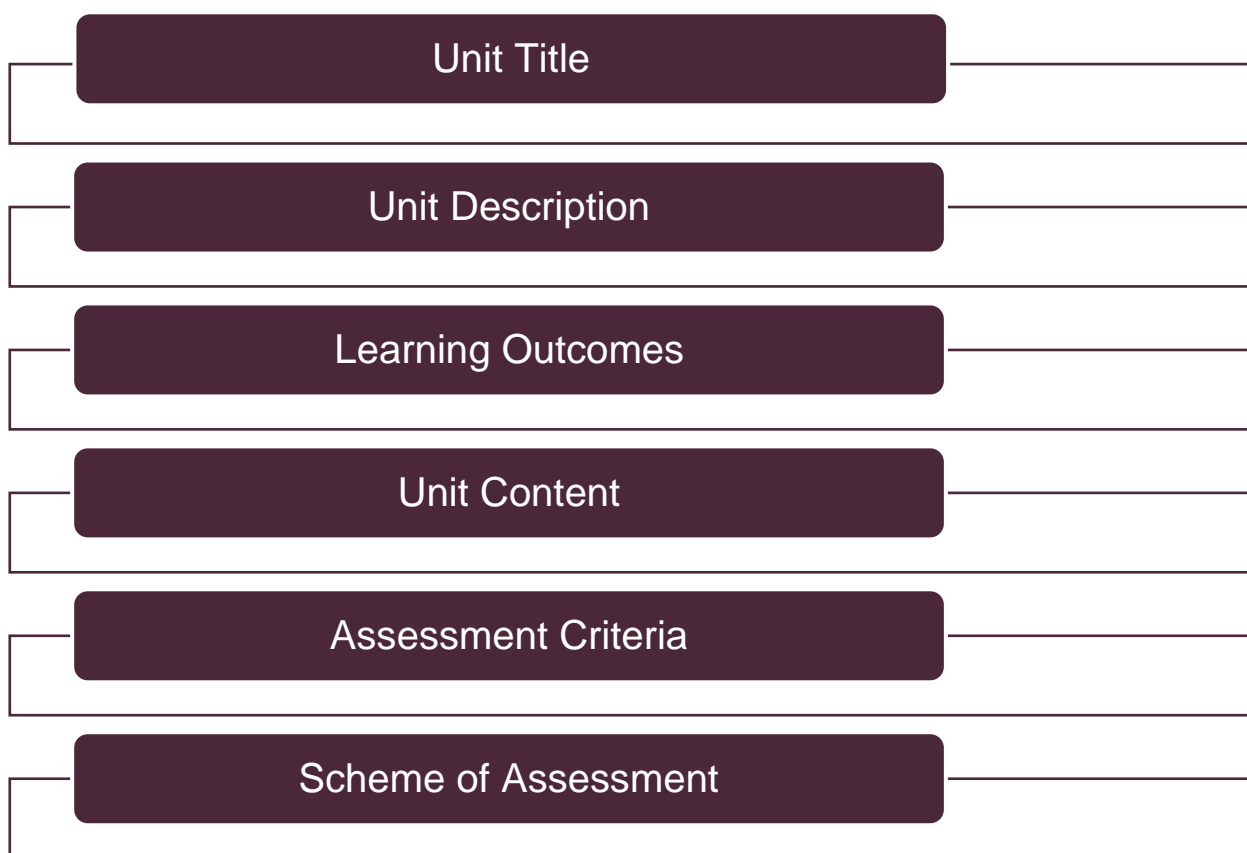
Internal Verification of Assessment Briefs	All assessment briefs are to be internally verified before being issued to the candidates. Within this process, important checks relating to learning outcomes, criteria to be assessed, validity and reliability are to be performed.
Internal Verification of Assessment Decisions	Once candidates complete their work, and their assessments have been corrected, a representative sample of candidates' work is to be internally verified.
External Verification	The process of external verification will ensure that programme quality and standards are met.

Part B: Unit Specifications

Introduction

This part of the programme guide provides detailed specification for each of the 3 units that are to be implemented for the successful completion of the programme. The curriculum design adopted for the development of the units of study is based on the learning outcomes approach. The latter can be defined as “written statements of what a candidate should be able to do/know/apply by the end of the learning process.”¹

The structure of the unit specifications is presented below:



Interpreting the Unit Specifications

The syllabus is written in a way whereby the knowledge criteria at MQF level 3 build upon the knowledge criteria at MQF level 2 and in the same manner the knowledge criteria at MQF level 2 build upon the knowledge criteria at MQF level 1. The same applies for the comprehension and application criteria. The comprehension criteria also build upon the knowledge criteria and the application criteria build upon the knowledge and the comprehension criteria.

¹ http://www.cedefop.europa.eu/files/4156_en.pdf

The document is an assessment syllabus; therefore any other examples or information apart from those written in the unit content should be taught so that candidates will enjoy the learning process and get a general overview of the subject. Under each grading criterion, only the **minimum** content that has to be covered is listed. The material covered in class must at least reflect **both** the unit content and grading criteria.

Examples (e.g.), commas, semi-colons, bullets, or, and N.B. are used in the Learning and Assessment Programme. When semi-colons are used the candidates should be assessed on all the content prescribed. However, when the list is headed with example (e.g.), all the content is to be covered but candidates are to be assessed on more than 50% of the content prescribed for that grading criterion. Where bullets are present, marks allocated for the criterion should be equally distributed. Where 'or' is present, only one of the listed items should be assessed. Where an 'N.B.' is present, important information regarding the assessment is given.

Where the plural is used in grading criteria (e.g. types, aspects, etc.), at least two answers are expected. Unless indicated otherwise in the unit content, when assignments are written, the criteria assessed should build on each other.

In each grading criterion there is a command verb which determines the type of answers expected by the student, such as list, identify, outline, describe, explain, etc... These verbs are defined in the glossary of verbs available on the MATSEC website. It is of vital importance that the command verbs specified in the grading criteria remain unchanged in the assignment brief.

Unit 1: Working in a Pet Shop and Plant Nursery Environment

Unit 1	Working in a Pet Shop and Plant Nursery Environment
<p>Unit Description</p>	<p>Horticulture, agribusiness and animal husbandry basic skills are brought together in order to simulate different tasks that a person would perform within a pet shop/plant nursery environment. Candidates will be introduced to correct and safe use of tools involved in plant production as well as introductory propagation techniques.</p> <p>Maintenance of fish tanks will also be considered. In this section students will be performing upkeep of aquaria, conduct basic water testing and amendments and simple troubleshooting.</p> <p>Candidates will be introduced to the basics in keeping mammalian and avian pets. The different requirements in terms of feeding, housing and handling will be tackled. Since this is linked to an agribusiness enterprise, the aspect of stock taking and organisation will be addressed.</p>

Learning Outcomes

At the end of the unit, I can:

- LO 1.** Follow procedures for basic plant production.
- LO 2.** Propagate plants using different methods.
- LO 3.** Undertake proper fish keeping tasks to maintain a healthy fish tank.
- LO 4.** Meet the basic needs of an avian and a mammalian pet.
- LO 5.** Follow procedures to record stock of an agribusiness enterprise.

Unit Content

Subject Focus	Working safely
LO 1.	Follow procedures for basic plant production.
K-1.	Tools and personal protective equipment: <ul style="list-style-type: none"> • Tools: e.g. hoes, rake, spade, pocket knife, dibber, pruning shears, saw, hedge shears; • Personal protective equipment: e.g. safety shoes, wellingtons, garden gloves, safety goggles, respirator, nitrile gloves, hazmat suit, sun hat.
	Common Health and Safety signage: e.g. flammable, corrosive, environmental hazard, irritant, toxic, health hazard.
C-1.	Preventive measures for maintaining a safe work environment: availability of personal protective equipment; training in Health and Safety on the workplace; performing a risk assessment; minimising hazards to the minimum.
	First Aid box items: sterile adhesive dressings; triangular bandages; safety pins; sterile un-medicated dressings; sterile eye wash; surgical gloves; roller bandages; personal protection shield for artificial breathing; gauze pads; scissors.
	Dealing with injuries: e.g. <ul style="list-style-type: none"> • Burn: cool burn; apply sterile dressing, • Cut: apply pressure on the area; apply sterile dressing, • Poisoning: notice symptoms; try to identify poison, • Electric shock: do not touch person; if possible turn off source of electricity, • Heat stroke: take reading of body temperature; apply cool water, • Eye irritation: avoid rubbing eyes; flush with cool water.
A-1.	Tools and personal protective equipment in producing a plant: <ul style="list-style-type: none"> • Tools: e.g. trowel, pocket knife, dibber, pruning shears; • Personal protective equipment: safety shoes/wellingtons; garden gloves; overalls.
	Routine work in producing a plant: e.g. de-weeding, regular irrigation, addition of fertiliser.
	Routine plant nursery activities: preparation and sowing of a full seed tray seeded with one plant species; tray tag marking and watering; repotting from a seed tray/smaller pot to a larger pot; maintaining the plant to maturity. N.B. For assessment purposes at MQF 3, only ornamental plants are to be considered.

Subject Focus	Plant propagation
LO 2.	Propagate plants using different methods.
K-2.	Types of germination: epigeal; hypogeal.
	Conditions for optimum plant propagation: sheltering; water availability; temperature/humidity; free from pathogens/pests; suitable growing medium.
	Propagation techniques: e.g. seeding, stem cutting, stem tuber cutting, rhizome cutting, grafting, layering, runners, bulb, leaf.
K-3.	Growing media used for plant propagation and growth: e.g. peat, compost, coconut coir, soil, expanded clay, rockwool®, vermiculite, perlite, horticultural sand.
	Applications of growing media in horticulture: open field production; production of seedlings; hydroponics; ornamental planting in pots.
	Characteristics of growing medium: water drainage; pathogen/pest free; nutrient-holding capacity; aeration.
K-4.	Tools and materials required to graft a plant: e.g. grafting knife, pruning saw, secateurs, grafting clips, grafting tape, grafting paint.
	Considerations required to graft a plant: e.g. suitable season for plant of choice, suitable grafting technique for plant of choice, selection of suitable rootstock and scion, cutting of root stock stem, preparation of scion according to grafting method, grafting and sealing of root stock with scion.
	Benefits of grafted plants: disease resistant; more vigorous growth; can be replicated; known performance (clone).
A-2.	Procedure to propagate a plant by cuttings: selection of healthy mother plant; suitable season for plant of choice; sterilisation/cleaning of tools; selection of branches for good cuttings; selection of suitable point on the branch for viable cutting; clean cutting at correct angle.
	Procedure to graft a plant: suitable season for plant of choice; suitable grafting technique for plant of choice; selection of suitable rootstock and scion; cutting of root stock stem; preparation of scion according to grafting method; grafting and sealing of root stock with scion.
	<p>Maintenance to produce a viable propagated plant:</p> <ul style="list-style-type: none"> • Cuttings: suitable growing medium; use of rooting powder; regular watering; inspection for signs of pathogens/pests; • Graft: monitoring graft wound; monitoring for shoots emerging from rootstock; inspection for signs of pathogens/pests; removal of any materials used to protect graft on success.

Subject Focus	Aquarist fundamentals
LO 3.	Undertake proper fish keeping tasks to maintain a healthy fish tank.
K-5.	Fish species: e.g. koi, goldfish, African cichlids, angel fish, mollies, guppies, tetras, clown fish, sea bream.
	Water parameters: e.g. ammonia, nitrites, nitrates, pH, hardness, phosphates, salinity.
	Fish habitats: e.g. cold fresh water, tropical planted fresh water, tropical stone-scape fresh water, brackish, marine Mediterranean, marine tropical.
C-2.	<p>Aquarium size for different fish types: koi/goldfish or dwarf African cichlids or tilapia or angel fish or mollies/guppies or tetras or clown fish.</p> <p>N.B. For assessment purposes, the justification of aquarium size should be in terms of fish size and aggression.</p>
	Benefits of water change of a fish tank: reduction of nitrogenous pollutants; replenish trace minerals; control water clarity; removal of decomposing organic material.
	Décor in relation to fish health: e.g. substrate, rocks, plants.
A-3.	<p>Monitoring water parameters: e.g. ammonia, nitrites, nitrates, pH, hardness, phosphates, salinity.</p> <p>N.B. For assessment purposes, monitoring is to be held over a minimum time-span of TWO weeks with a minimum of FOUR entries.</p>
	Water Change: wear non-slip shoes; switch off electrical components; reduce water using appropriate means; amount of water relative to stocking density/fish type; add conditioner/additives required; top-up to suitable level; switch on electrical components; check that décor is in suitable place and all equipment is working.

Subject Focus	Caring for animals
LO 4.	Meet the basic needs of an avian and a mammalian pet.
K-6.	Mammalian pets commonly kept in Malta: e.g. cats, dogs, rabbits, horses, guinea pigs, hamsters.
	Accommodations for mammalian pets commonly kept in Malta: kennel; stable; hamster cage; rabbit/guinea pig cage; dog/cat transport cage.
	Diet for mammalian pets through all life stages: weaner; juvenile; adult; senior.
K-7.	Avian pets commonly kept in Malta: e.g. parakeets, finches, pigeons.
	Accommodations for common avian pets: e.g. pigeon pens, bird cages, aviary.
	Diet for avian pets through all life stages: chick; juvenile/adult.
C-3.	Environmental conditions for keeping mammalian and avian pets: temperature; lighting.
	Factors determining the number of a given pet for a given cage/housing: size of pet; natural behaviour of pet.
	Criteria for designing a record-keeping sheet for feeding and vaccination: ID/age/breed; feeds given; vaccines given; dates of entries.
A-4.	Cleaning of an avian and mammalian pet cage/housing: removal of excrement/debris; washing of cage/housing and accessories; cleaning of feeding/drinking equipment.
	Feeding an avian and mammalian pet: correct feed; suitable weight/volume; correct placing of food in cage/housing.
	Handling an avian and mammalian pet: safe and comfortable handling for pet; safe and comfortable handling for candidate.

Subject Focus	Stock taking
LO 5.	Follow procedures to record stock of an agribusiness enterprise.
K-8.	Importance of stock taking exercise in an agribusiness enterprise: inventory management; discovering loss of stock; be aware of the condition of current stock; discovering product performance or issues in pricing strategies.
	The stock taking procedure: e.g. choose appropriate stock take time so as not to affect operations, prepare tools and stock sheets, put aside sold items, count items accurately (do not guess quantities), mark stock sheet, validate (compare physical count to stock records), update stock records.
A-5.	Stock taking tools: clipboards; stock sheets and pens; calculators.
	Organisation of stock in preparation for stock taking: stock that has been sold but not yet delivered to customers; stock available for sale.
	Stock taking exercise: counting stock accurately; recording inventory levels; highlighting discrepancies; recording stock condition.

Learning Outcomes and Assessment Criteria

Subject Focus:	Working safely
Learning Outcome 1:	Follow procedures for basic plant production.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-1. Identify tools and personal protective equipment that are used in an agribusiness enterprise.	K-1. Match personal protective equipment to their functions.	K-1. Recognise common Health and Safety signage used in agricultural activity.	C-1. Outline preventive measures required for maintaining a safe work environment in a horticultural enterprise.	C-1. Describe the use of different items that should be present in a First Aid box.	C-1. Explain ways of dealing with particular injuries.	A-1. Use the required agricultural tools and personal protective equipment to produce a plant.	A-1. Practice routine work that is required for the production of a plant.	A-1. Practice routine plant nursery activities.

Subject Focus:	Plant propagation
Learning Outcome 2:	Propagate plants using different methods.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-2. Mention the different types of germination.	K-2. Outline different conditions required for optimum propagation of plants.	K-2. Describe different propagation techniques used for different plants.						
K-3. List different growing media used for plant propagation and growth.	K-3. State suitable growing media for different applications in horticulture.	K-3. Outline characteristics of a selected growing medium used in horticulture.				A-2. Use the correct procedure to propagate a plant by cuttings.	A-2. Use the correct procedure to graft a plant.	A-2. Maintain a number of cuttings and grafts to produce a viable propagated plant.
K-4. List the tools and materials required to graft a plant.	K-4. Mention considerations required to graft a plant.	K-4. Describe the benefits of grafted plants.						

Subject Focus:	Aquarist fundamentals
Learning Outcome 3:	Undertake proper fish keeping tasks to maintain a healthy fish tank.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-5. Match fish species to their respective habitat.	K-5. List water parameters that should be monitored to keep a healthy fish tank.	K-5. Outline a range of fish habitats in relation to water parameters.	C-2. Justify the aquarium size for a given fish species.	C-2. Explain the benefits of water change of a fish tank.	C-2. Discuss the importance of the right aquarium décor in relation to fish health.	A-3. Give the right quantity of the right feed to fish in a running fish tank.	A-3. Monitor given water parameters for a running fish tank.	A-3. Conduct a water change for a running fish tank.

Subject Focus:	Caring for animals
Learning Outcome 4:	Meet the basic needs of an avian and a mammalian pet.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-6. List common mammalian pets kept in Malta.	K-6. Identify different types of accommodation for common mammalian pets in Malta.	K-6. Outline a diet for a mammalian pet through all life stages.	C-3. Outline the ideal environmental conditions required to keep a given mammalian pet and a given avian pet.	C-3. Describe factors that determine the number of a given pet that should be kept in a given cage/housing.	C-3. Discuss the criteria that should be considered when designing a record-keeping sheet for feeding and vaccination of a given pet.	A-4. Clean the cage/housing of a given avian and mammalian pet.	A-4. Give the right quantity of feed to a given avian and mammalian pet according to the given life stage.	A-4. Use the correct procedure for handling a given avian and mammalian pet.
K-7. Identify common avian pets kept in Malta.	K-7. Match different accommodations with common avian pets in Malta.	K-7. Outline a diet for a given avian pet through all life stages.						

Subject Focus:	Stock taking
Learning Outcome 5:	Follow procedures to record stock of an agribusiness enterprise.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-8. Define stock taking.	K-8. Outline the importance of stock taking in an agribusiness enterprise.	K-8. Describe steps of the stock taking procedure.				A-5. Prepare the necessary tools to conduct a stock taking exercise of an agribusiness enterprise.	A-5. Organize stock in preparation for a stock taking exercise of an agribusiness enterprise.	A-5. Conduct a stock taking exercise of an agribusiness enterprise.

Assessment Criteria

Assessment criteria provide guidance on how the candidates will be assessed in order to ensure that the learning outcomes have been achieved.

To achieve each outcome a candidate must satisfy the assessment criteria listed in the previous table. The assessment criteria which will be assessed in the controlled assessment have been highlighted.

Scheme of Assessment

Every assignment should include at least **ONE** knowledge criterion and **ONE** application criterion.

Assignment Number	Assignment Type	Percentage distribution
1	Coursework	24 – 42%
2	Coursework	24 – 42%
3	Controlled	24 – 42%

Distribution of Marks

Criteria	MQF Level 1 Marks	MQF Level 2 Marks	MQF Level 3 Marks	Totals
Knowledge	1	1	2	4
Comprehension	2	2	2	6
Application	3	3	4	10

Unit 2: Taking Care of Plants and Animals

Unit 2	Taking Care of Plants and Animals
<p>Unit Description</p>	<p>Landscaping, aquascaping, animal grooming and animal health are the fundamentals of this unit in which students will build upon the knowledge attained in Unit 1 and apply it to the mentioned contexts of the agribusiness industries.</p> <p>The horticultural aspect is explored through activities of sustainable embellishment and upkeep of gardens, orchards and parks. Landscaping exercises should foster the idea of sustainability in order to promote plants which are resistant to drought as well as conserve local species which will in turn benefit local fauna. The concepts of embellishment are closely related to aquascaping and custom-made aquaria, hence candidates will be expected to handle such exercises.</p> <p>Animal grooming and basic animal care are an essential addition to the ornate aspect of agribusiness and are an asset for the candidates' understanding of the subject.</p>

Learning Outcomes

At the end of the unit, I can:

- LO 1.** Embellish a sustainable garden area over a period of time.
- LO 2.** Follow correct procedures to prune plants.
- LO 3.** Assemble an aquascaped aquarium.
- LO 4.** Undertake basic animal grooming procedures in a controlled environment.
- LO 5.** Conduct a basic animal health assessment.

Unit Content

Subject Focus	Landscaping
LO 1.	Embellish a sustainable garden area over a period of time.
K-1.*	Common sustainable garden types for the Mediterranean climate: e.g. rock, roof, wall, orchard, xeriscape, herb, Maltese indigenous.
	N.B. For assessment purposes, FOUR plants suitable for a particular garden type should be named.
	Parameters to consider: availability of water; exposure to wind and sunlight; purpose of site to be embellished; depth of soil.
K-2.	Fertiliser types: e.g. slow release, soluble, pelleted manure, non-pelleted manure, compost, foliar.
	Benefits of organic matter in the soil bed: improves water holding capacity; improves soil aggregation; increases microbial activity; reduces soil erosion.
	Irrigation systems suitable for gardens: drippers; soaker tubing; sprinklers; by hose.
C-1.**	Design for a garden/green patch: sketch of plan to scale; plant species*; distribution of plants and pathways; irrigation system.
	*N.B. For assessment purposes, a minimum of FOUR plant species should be considered.
	Amendments to a site for a proposed garden: e.g. use of windbreakers, increase depth of soil bed, addition of soil conditioner(s), supply of water and/or electricity, use of mulch(es), addition of planters, terracing.
A-1.***	Soil bed preparation for plant transplanting: removal of unwanted materials and/or weeds; loosening of structure; application of conditioners and/or dressings.
	Transplanting potted plants: transferring plant to area; topping with media; irrigating.
	Maintaining transplanted plants: e.g. irrigation, de-weeding, checking for nutrient deficiencies, checking for pests and diseases, treating problems, tilling soil, trimming/pruning.

***N.B.** For assessment purposes, local indigenous plants should ideally be selected for sustainability reasons.

****N.B.** For assessment purposes related to garden design and amendments, the design should be based on the following given specifications: size of area; type of area to be embellished; scope of area to be embellished; availability of water; depth of soil; exposure to wind and sunlight.

*****N.B.** For assessment purposes, transplanted plants must be maintained by each candidate for at least **TWO** weeks.

Subject Focus	Pruning
LO 2.	Follow correct procedures to prune plants.
K-3.	Tools used in pruning: e.g. secateurs, hedge shears, hedge trimmer, brush cutter, folding saw, large pruning saw, chain saw, lopper, lawn mower.
	Required maintenance of pruning tools/equipment: cleaning; disinfecting; oiling; sharpening.
A-2.	Selection of tools to undertake trimming and pruning: suitable tool to perform pruning task; suitable tool to perform trimming task.
	Trimming plant/grass for ornamental purposes: disinfecting/cleaning blade(s) before and/or after use; handling tool correctly; achieving shape/aesthetic value according to purpose.
	Branch cutting of trees/shrubs: disinfecting/cleaning blade(s) before and/or after use; handling tool correctly; making cuts without causing damage to trees; achieving desired result as per specified job.

Subject Focus	Aquarium construction
LO 3.	Assemble an aquascaped aquarium.
K-4.	Materials used in the construction of aquaria: glass; aquarium safe silicone; acrylic; acrylic cement.
	Temperature control and filtration equipment: e.g. immersion heater, chiller, sump filter, canister filter, internal filter, sponge filter, trickle filter.
	Lighting systems used in aquaria: LED; metal halide; CFL; fluorescent.
K-5.	Substrates used in aquascaping: e.g. aquarium soil, sand, gravel.
	Aquascaping styles: e.g. jungle, biotype, iwagumi, Dutch, Taiwanese, nature.
	Décor and type of plants for aquascaping styles: <ul style="list-style-type: none"> • Jungle: high density of grasses and leafy plants and mosses; wood is normally used OR • Biotype: plants limited to particular biotype; wood and rocks limited to particular biotype OR • Iwagumi: carpeting plants mostly used; rocks in an odd number OR • Dutch: high stocking density of different plant species; terracing used OR • Taiwanese: different plant species used as miniature plants; use of figurines to emulate structures or people OR • Nature: different plant species used as miniature plants; rocks and wood used as part of the emulated natural environment.

C-2.	Different filtration types: e.g. mechanical, biological, chemical.
	Justification of construction material: size; safety.
	Design parameters: e.g. dimensions, material, filtration system, décor, lighting system, plants (live/synthetic) and substrate.
A-3.	Aquarium construction: correct use of PPEs; application of bonding material; bonding of panels.
	Preparation of aquarium to host given biota: checking for leaks; cleaning glass; setting-up filtration and temperature controllers; setting-up lighting system.
	Basic aquascaping tasks: adding substrate and décor; fixing plants into substrate; addition of fertiliser; trimming plants. N.B. For assessment purposes, the aquascaped tank should run for at least TWO weeks.

Subject Focus	Animal Grooming
LO 4.	Undertake basic animal grooming procedures in a controlled environment.
K-6.	Basic tools used in animal grooming: clippers; brushes; scissors; nail trimmers.
	Consequences of neglecting an animal's coat: heat stress; lack of hygiene; missing early spotting of health problems; tangled coat.
	Grooming tasks: bathing; drying of coat; brushing, trimming of coat.
K-7.	Different coat types: hair; fur; wool; top coat; under coat.
	Grooming preparation routines: clearing work space from any objects that can harm groomer/animal; preparing all tools needed before animal is present; wearing appropriate attire; approaching and handling animal correctly.
	Non-coat grooming procedures: e.g. trimming of nails/claws, cleaning of eyes, cleaning of ears.
A-4.	Maintaining pet grooming tools: e.g. removing hair, soaking in soap, wiping with alcohol, drying, placing in UV cabinet.
	Removing excess coat: handling of animal; handling tools correctly; using right procedure to brush depending on animal.
	Caring for paws, nails, eyes and ears: removing extra hair in footpads; using clipper to carefully trim nails without causing bleeding and pain; using washcloth/sponge to clean eyes; using cotton ball and ear rinse to clean outer flap of animal's ear.

Subject Focus	Animal Health
LO 5.	Conduct a basic animal health assessment.
K-8.	Nursing equipment for the checking of vital health parameters: rectal thermometer; stethoscope.
	Importance of carrying out an animal health check: looking for physical abnormalities; spotting pests.
	Common diseases/conditions and parasites: <ul style="list-style-type: none"> • Diseases/Conditions: cataracts or arthritis or parvovirus or ringworm or diabetes; • Parasites: fleas or ticks or intestinal worms.
C-3.	Function of pet nursing equipment: rectal thermometer (to measure body temperature); stethoscope (to monitor internal organs).
	Importance of vaccinating an animal: prevention of disease; controlling disease transmission.
	The five freedoms: from hunger/thirst; from discomfort; from pain and injury or disease; to express normal behaviour; from fear and distress.
A-5.	Health checklist: e.g. tail, skin, limbs, coat, eyes, nose, ears, paws, teeth, body temperature.
	Signs of normal/abnormal animal behaviour: appetite; aggression; signs of lethargy; regular defecation.
	Animal's current status health check: tail; skin; limbs; coat; eyes; nose; ears; paws; teeth; body temperature.

N.B. No marks should be awarded in any application criteria unless all appropriate PPE are used and Health and Safety practices are strictly abided-to!

Learning Outcomes and Assessment Criteria

Subject Focus:	Landscaping
Learning Outcome 1:	Embellish a sustainable garden area over a period of time.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-1. List common sustainable garden types suitable for the Mediterranean climate.	K-1. Name plants suitable for a particular garden type.	K-1. Describe parameters to be considered in determining the suitability of a site for a particular garden type.	C-1. Suggest a correct irrigation system for a given area.	C-1. Illustrate a simple design for a garden/green patch according to given specifications.	C-1. Discuss possible amendments to a site for a proposed garden according to given specifications.	A-1. Prepare soil bed for plant transplanting.	A-1. Transplant potted plants to a specific garden area.	A-1. Maintain transplanted plants over a period of time.
K-2. Name different types of fertiliser utilised in horticulture.	K-2. Outline the benefits of organic matter in the soil bed.	K-2. Describe different irrigation systems suitable for gardens.						

Subject Focus:	Pruning
Learning Outcome 2:	Follow correct procedures to prune plants.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-3. Identify tools used in pruning.	K-3. Outline the function of tools used in pruning.	K-3. Describe the required maintenance of a given pruning tool/equipment.				A-2. Select the appropriate tools to undertake trimming and pruning for a given job.	A-2. Trim plant/grass for ornamental purposes.	A-2. Cut appropriately the right branches to prune given trees/shrubs.

Subject Focus:	Aquarium construction
Learning Outcome 3:	Assemble an aquascaped aquarium.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-4. List materials used in the construction of aquaria.	K-4. Match temperature control and filtration equipment with a given aquarium.	K-4. Describe the characteristics of different lighting systems used in aquaria.	C-2. Outline different filtration types.	C-2. Justify the use of a construction material for a given aquarium.	C-2. Discuss design parameters based on a client request.	A-3. Construct an aquarium according to specifications.	A-3. Prepare an aquarium to make it suitable to host the given biota.	A-3. Undertake basic aquascaping tasks according to a given style over a period of time.
K-5. Identify different substrates used in aquascaping.	K-5. Name different aquascaping styles.	K-5. Describe the décor and types of plants needed for a given aquascaping style.						

Subject Focus:	Animal Grooming
Learning Outcome 4:	Undertake basic animal grooming procedures in a controlled environment.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-6. Identify basic tools used in animal grooming.	K-6. Outline consequences of neglecting an animal's coat.	K-6. Describe grooming tasks needed for a given animal.				A-4. Maintain tools used for pet grooming.	A-4. Employ the proper procedure in removing excess coat of an animal under supervision.	A-4. Use the proper technique for the care of paws, nails, eyes and ears.
K-7. Name different coat types.	K-7. Outline grooming preparation routines.	K-7. Describe non-coat grooming procedures.						

Subject Focus:	Animal Health
Learning Outcome 5:	Conduct a basic animal health assessment.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-8. Identify proper pet nursing equipment used for the checking of vital health parameters.	K-8. Outline the importance of carrying out an animal health check.	K-8. Describe a common disease/condition and a common parasite for a given pet.	C-3. Outline the function of pet nursing equipment used for the checking of vital health parameters.	C-3. Explain the importance of vaccinating an animal.	C-3. Discuss how the five freedoms should be maintained by the veterinary nurse/groomer.	A-5. Prepare a checklist to be used during an animal health check.	A-5. Record observed signs of normal/abnormal behaviour of an animal.	A-5. Conduct an animal's health check to assess current status using the appropriate PPEs.

Assessment Criteria

Assessment criteria provide guidance on how the candidates will be assessed in order to ensure that the learning outcomes have been achieved.

To achieve each outcome a candidate must satisfy the assessment criteria listed in the previous table. The assessment criteria which will be assessed in the controlled assessment have been highlighted.

Scheme of Assessment

Every assignment should include at least **ONE** knowledge criterion and **ONE** application criterion.

Assignment Number	Assignment Type	Percentage distribution
1	Coursework	24 – 42%
2	Coursework	24 – 42%
3	Controlled	24 – 42%

Distribution of Marks

Criteria	MQF Level 1 Marks	MQF Level 2 Marks	MQF Level 3 Marks	Totals
Knowledge	1	1	2	4
Comprehension	2	2	2	6
Application	3	3	4	10

Unit 3: Plant and Animal Production

Unit 3	Plant and Animal Production
<p>Unit Description</p>	<p>This unit will focus primarily on farming in which crops, small farm animals and apiculture are present. Cultivation of crops, including irrigation, planning and nutrient management are explored whilst keeping in mind Health and Safety.</p> <p>Apiculture is introduced as an important link to the natural cycle of life. Basic competences in relation to beekeeping which can be part of, or constitutes an entire enterprise, shall be acquired.</p> <p>Small farm animals will be approached through the keeping and breeding of commercial rabbits and poultry. Work in the area will consist of basic farm management, biosecurity and reproduction.</p>

Learning Outcomes

At the end of the unit, I can:

- LO 1.** Cultivate a range of crops from seed to harvest.
- LO 2.** Apply a suitable fertiliser using the appropriate technique.
- LO 3.** Conduct basic apicultural practices.
- LO 4.** Use adequate measures for healthy rabbit and poultry growth.
- LO 5.** Conduct a breeding programme for rabbits and poultry.

Unit Content

Subject Focus	The crop market
LO 1.	Cultivate a range of crops from seed to harvest.
K-1.	<p>Crop types: leafy crops; fruiting crops; tuberous crops; grains.</p> <p>Crop production types: outdoor soil-based (geoponic) crop production; greenhouse soil-based (geoponic) production; hydroponic crop production; aquaponic crop production; organic crop production.</p> <p>Production requirements: soil/media requirements; planting method and spacing; irrigation system and intensity; general crop care from planting to harvesting.</p> <p>N.B. For assessment purposes, ONE of the following crops should be considered: lettuce or cabbage or spinach or tomatoes or zucchini or broad beans or citrus or potatoes or onions or garlic or wheat.</p>
K-2.	Market actors: agribusiness entrepreneur; producer; processors/manufacturers; wholesaler/agent/distributor; consumer.
C-1.	<p>Justifying the harvest date deviation of a crop: lettuce or cabbage or spinach or tomatoes or zucchini or broad beans or wheat or potatoes or onions or garlic.</p> <p>N.B. For assessment purposes, THREE options of harvest date deviations should be provided by the assessor, out of which the candidate should choose and justify ONE for a given crop in a given scenario.</p> <p>Sales agreements: online and/or contractual and/or by order and/or retail.</p> <p>N.B. For assessment purposes, TWO of the following customer scenarios should be provided by the assessor: end consumer and/or processor and/or wholesaler and/or hospitality industry.</p> <p>Crop production strategy: diversity of crops and/or variety of crops and/or quantity of crops and/or production method and/or price.</p> <p>N.B. For assessment purposes, TWO of the above aspects, or other valid ones, should be considered by the candidate as a basis for justifying the crop production strategy.</p>
A-1.	<p>Drip irrigation system for a specific land area: attaching drip tape in the correct orientation; laying of drip tape; sealing off the drip tape.</p> <p>Calculation of number of seeds/plants: calculating area of plot; establishing spacing; calculating the number of seeds/plants needed according to respective spacing.</p> <p>Production of crops from seed to harvest:</p> <ul style="list-style-type: none"> • Sow seeds or transplant seedlings: sowing/rootball depth; inter-row and intra-row spacing; • Inspection of crops; • Irrigation and de-weeding; • Harvesting of crop. <p>N.B. For assessment purposes, a minimum area of 25 m² per student should be utilised for this criterion at all MQF levels.</p>

Subject Focus	Plant nutrition
LO 2.	Apply a suitable fertiliser using the appropriate technique.
K-3.	Crop requirements: leaf growth; fruit turgidity; healthy flowering and fruiting; healthy rooting. N.B. For assessment purposes, the following macronutrients should be considered: Nitrogen; Phosphorus; Potassium; Calcium; Magnesium; Sulfur.
	Deficiency symptoms: e.g. total leaf chlorosis of older leaves (N), leaf purpling (P), leaf margin necrosis (K), deformed/stunted new leaves (Ca), interveinal chlorosis of older leaves (Mg), interveinal chlorosis on new leaves (Fe), necrotic spots on new leaves (Zn), total leaf chlorosis on new leaves (S), necrosis of shoot tips (B).
A-2.	Correct fertiliser choice: type of fertiliser; nutrient content; frequency of application.
	Preparation of fertiliser for a crop: correct dosage; application media.
	Applying proper fertiliser: identification of deficiency; correct use of PPE; application; record keeping of fertiliser application.

Subject Focus	Introductory beekeeping
LO 3.	Conduct basic apicultural practices.
K-4.	Products extracted in apiculture: honey; wax; propolis; royal jelly; pollen.
	Roles of the honeybee colony members: e.g. egg/pheromone producer (queen), foragers, cleaners, undertakers, nurses, builders, temperature controllers, guards, mating with virgin queen (drones).
	Basic steps in honey production: selecting hive system; introducing bees to hive; inspecting bee colony regularly; making necessary interventions to care for your colony; extracting honey when abundant and capped.
K-5.	Tools and equipment used to conduct elementary beekeeping tasks: e.g. beekeeping suit, beekeeping veil, bee keeping gloves, smoker, hive tool, bee brush, wire crimper, wire embedder, centrifugal honey extractor.
	Setting-up a beehive: choice of site; setting up of wax foundations; assembling all components of the hive; hive placed facing south.
	Procedure of beehive inspection: e.g. preparing smoker and wearing PPE's, smoking entrance, removing outer cover and smoke, removing crown board and smoke, removing super and smoke, removing frame and inspecting for eggs and larvae, reassembling hive.

C-2.	Meliferous plants: e.g. leguminosae, rosaceae (stone and pomme fruits), lamiaceae (mint etc.), rutaceae (citrus), asteraceae (white thistle), amaryllidaceae (onion), lauraceae (bay laurel), cucurbitaceae (squash etc.).
	Reasons for bee colony swarming: overpopulation; reproduction.
	Beekeeping tasks: e.g. introducing bees to a hive, inspection of a hive, feeding a colony, splitting a colony, adding supers, extracting honey and other products.
A-3.	Setting-up a beehive: choice of site; setting up of wax foundations; assembling all components of the hive; placing hive facing south.
	Approaching a honeybee colony correctly: wearing all PPEs correctly; working calmly.
	Routine apiculture tasks: firing a smoker; smoking hive throughout inspection; inspecting for eggs and larvae; locating different pollens; locating capped and uncapped cells.

Subject Focus	Small farm animals
LO 4.	Use adequate measures for healthy rabbit and poultry growth.
K-6.	Nutrients for healthy rabbit/poultry growth: proteins; fats; carbohydrates; minerals; vitamins.
	Biosecurity measures for healthy rabbit/poultry husbandry: e.g. quarantine new life stock, administer and record vaccinations regularly, make use of disinfecting floor mats, do not share tools and equipment with other farms, be on the lookout and record signs of illness, keep tools and equipment clean.
	Function of nutrients: e.g. protein, carbohydrates, fibre, fat, iron, calcium, Vitamin A, Vitamin C.
C-3.	Importance of record keeping: helps detect problems; reference for types of feed; reference for types of medication; helps prevent inbreeding.
	Feed types for rabbit/poultry at different life stages: <ul style="list-style-type: none"> Commercial Rabbits: kit; weaning; fattening; breeding stock; lactation OR Poultry: chick; pullet/layer hen; fattening broiler; finishing broiler.
	Implications of medicinals in relation to the consumer: antibiotics; anti-parasitic agents.

A-4.	<p>Biosecurity measures: quarantine new life stock; administer and record vaccinations regularly; make use of disinfecting floor mats; do not share tools and equipment with other farms; be on the lookout and record signs of illness; keep tools and equipment clean.</p> <p>N.B. The school should have a basic biosecurity protocol in place according to the exigencies of the farm. This protocol should be communicated to candidates and adhered to when undertaking rabbitry tasks.</p>
	<p>Maintaining a clean and hygienic environment in a rabbitry and poultry unit:</p> <ul style="list-style-type: none"> • Rabbitry: cleaning of cages; removal of excrement and cleaning of floors; disinfection of drinker/feeder system; • Poultry unit: cleaning of cages and/or nests; removal of excrement and cleaning of floors; disinfection of drinker/feeder system.
	<p>Routine tasks in a rabbitry and poultry unit:</p> <ul style="list-style-type: none"> • Rabbitry: feeding rabbits; monitoring livestock health; preparing and/or cleaning and inspecting nesting boxes; recording inspection of rabbitry equipment for wear and tear; • Poultry unit: giving feed and water to poultry; collecting eggs; monitoring livestock health; recording inspection of poultry equipment for wear and tear.

Subject Focus	Breeding small farm animals
LO 5.	Conduct a breeding programme for rabbits and poultry.
K-7.	Steps involved in the production of layer chicks: collect fertilised eggs; place in incubator; maintain eggs in incubator; place chicks in brooder when hatched.
	Steps involved to produce layer hens: maintain brooder; supply daily with chick starter feed and water for 8 weeks; transfer to larger pen and supply daily with chick grower feed and water for 10 weeks; transfer to barn/cages and supply daily with layer feed and water.
	The process to produce chicks utilising an automated table top incubator from start to hatching: add water to one container of the incubator (topping up daily); set temperature to 37.7°C and run empty for 2 hours; place eggs with air cell upwards on egg turning unit plus close lid and turn on motor; candle on the 7 th and 14 th day disposing of failed eggs; on the 18 th day remove eggs from egg turning unit and place on hatching grille; fill in both containers with warm water (topping up daily); close lid and set temperature to 37.2°C; on the 21 st day allow 12 hours after hatching and transfer to brooder.
K-8.	Steps involved in a commercial rabbit breeding system: select parent stock; place doe in buck's cage for mating; place nest in doe's cage on the 24 th day from mating; clean nest trays regularly; wean depending on breeding intensity.

	<p>Behaviour and anatomical features of rabbits in relation to reproduction:</p> <ul style="list-style-type: none"> • Behaviour: <ul style="list-style-type: none"> ○ Males: spraying of urine; ○ Females: assume lordosis; • Anatomical features: <ul style="list-style-type: none"> ○ Males: well developed genitals; ○ Females: vulva becomes red.
	<p>Function of rabbit's reproductive organs:</p> <ul style="list-style-type: none"> • Males: penis; testes; prostate; seminal vesicle; urethra; • Females: ovaries; vulva; uterus; cervix; vagina.
A-5.	<p>Examination of a rabbit to determine its sex: handling rabbit; positioning rabbit; identifying genitals.</p>
	<p>Features for the selection of commercial rabbits and layers for commercial breeding:</p> <ul style="list-style-type: none"> • General characteristics in rabbits and layers: animals having desirable traits; free from disease; good blood lines; does not have records showing defects/problems; • Rabbit characteristics: <ul style="list-style-type: none"> ○ Males: at least six months old; in possession of robust and good muscular structure with well visible testes; ○ Females: between 4 kg and 4.5 kg; mother weans a good number of kits per litter; • Layer chicken characteristics: <ul style="list-style-type: none"> ○ Males: at least 8 months old; in possession of a good muscular structure and well groomed; ○ Females: produce a good number of eggs; eggs are of desirable size.
	<p>Basic reproductive schemes:</p> <ul style="list-style-type: none"> • For a doe: selection of parent stock; selection of breeding intensity; copulation; planning of kindling; preparation of nest; cleaning of nest upon kindling; counting of kits; weaning; • For layers: selection of parent stock; collection and storage of fertile eggs; loading and operation of incubator for the rotating stage; candling eggs; loading and operating incubator for the hatching stage; inspection of hatching; allowing feathers to dry; transferring chicks to heated brooder.

N.B. No marks should be awarded in any application criteria unless candidates are wearing all appropriate clothing and PPE (including gloves) during practical work, and Health and Safety practices are strictly abided-to!

Learning Outcomes and Assessment Criteria

Subject Focus:	The crop market
Learning Outcome 1:	Cultivate a range of crops from seed to harvest.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-1. Identify different crop types.	K-1. Outline different crop production types.	K-1. Describe the production requirements of one named crop.	C-1. Justify a harvest date deviation of a given crop.	C-1. Justify the appropriate sales agreement/s to be established with given customers.	C-1. Justify a crop production strategy for a given scenario.	A-1. Follow instructions to set up a drip irrigation system for a specific land area.	A-1. Calculate the number of seeds/plants of a single plant needed for a specific land area.	A-1. Produce a number of crops from seed to harvest for a specific land area according to your calculations.
K-2. Define the term market in relation to agribusiness.	K-2. Define the terms demand and supply in relation to agribusiness.	K-2. Describe the role of different market actors.						

Subject Focus:	Plant nutrition
Learning Outcome 2:	Apply a suitable fertiliser using the appropriate technique.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-3. Define plant macronutrients and micronutrients.	K-3. Select the appropriate macronutrient/s for specific crop requirements.	K-3. Relate different deficiency symptoms to the missing nutrient/s causing them.				A-2. Choose the correct fertiliser for a specific objective.	A-2. Prepare the correct fertiliser for a specific crop.	A-2. Apply the proper fertiliser using appropriate Health and Safety equipment.

Subject Focus:	Introductory beekeeping
Learning Outcome 3:	Conduct basic apicultural practices.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-4. Name different products extracted in apiculture.	K-4. Outline the different roles of the honeybee colony members in different castes.	K-4. Describe the basic steps in honey production.	C-2. Identify plants which are meliferous.	C-2. Explain why a bee colony will swarm.	C-2. Justify proper timing and conditions for undertaking given beekeeping tasks.	A-3. Set-up a beehive to host a bee colony.	A-3. Follow correct procedures in approaching a honey bee colony.	A-3. Practice routine tasks in apiculture using appropriate tools safely.
K-5. Identify tools and equipment used to conduct elementary beekeeping tasks.	K-5. List essential steps in setting up a beehive.	K-5. Outline steps in the procedure of a beehive inspection.						

Subject Focus:	Small farm animals
Learning Outcome 4:	Use adequate measures for healthy rabbit and poultry growth.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-6. State the nutrients required for healthy rabbit/poultry growth.	K-6. List biosecurity measures for healthy rabbit/poultry husbandry.	K-6. Outline the function of nutrients for healthy rabbit/poultry growth.	C-3. Outline the importance of record keeping in rabbit/poultry production unit.	C-3. Describe the feed types required for given rabbit/poultry at different life stages.	C-3. Discuss the implications of medicinals in commercial rabbit/poultry breeding in relation to the consumer.	A-4. Use the correct biosecurity protocol to undertake tasks in a rabbitry and poultry unit.	A-4. Maintain a clean and hygienic environment in a rabbitry and poultry production unit.	A-4. Undertake routine tasks in a working rabbitry and poultry unit.

Subject Focus:	Breeding small farm animals
Learning Outcome 5:	Conduct a breeding programme for rabbits and poultry.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-7. List the basic steps involved in the production of layer chicks.	K-7. Outline the steps involved in growing layer chicks to pullet stage.	K-7. Describe the process of producing chicks utilising an automated table top incubator from start to hatching.				A-5. Examine a rabbit to determine its sex.	A-5. Select animals with the required features for commercial rabbits and layers breeding.	A-5. Conduct a basic reproductive scheme for a doe and layers.
K-8. List the steps involved in a commercial rabbit breeding system.	K-8. Outline rabbits' behaviour and anatomical features in relation to reproduction.	K-8. Describe the function of a rabbit's reproductive organs.						

Assessment Criteria

Assessment criteria provide guidance on how the candidates will be assessed in order to ensure that the learning outcomes have been achieved.

To achieve each outcome a candidate must satisfy the assessment criteria listed in the previous table. The assessment criteria which will be assessed in the controlled assessment have been highlighted.

Scheme of Assessment

Every assignment should include at least **ONE** knowledge criterion and **ONE** application criterion.

Assignment Number	Assignment Type	Percentage distribution
1	Coursework	24 – 42%
2	Coursework	24 – 42%
3	Controlled	24 – 42%

Distribution of Marks

Criteria	MQF Level 1 Marks	MQF Level 2 Marks	MQF Level 3 Marks	Totals
Knowledge	1	1	2	4
Comprehension	2	2	2	6
Application	3	3	4	10

Appendix 1 – Minimum required resources

This list is not intended to be exhaustive. These resources should be available for at least 16 candidates.

General Requirements

- Preferably, minimum 2 tumuli of arable land and suitable for cultivation
- Greenhouse/propagation house
- Manure clamp
- Cesspit
- Storage for agricultural machinery
- Storage for fertiliser and pesticides
- Storage for fodder and animal feed
- Class room with interactive monitor or LCD projector
- Dressing rooms with lockers
- Toilets with shower
- Running water
- Washing machine
- Tumble drier
- Adequate supply of second class water for irrigation

Rabbitry

- Flat deck breeder cages
- Extractor
- Fly zapper
- Rabbit scales up to 10kg
- Hygrometer and thermometer
- Drainage system to cesspit
- Buffer tank 50 litres
- Light fixtures with timer
- Sink - with hot and cold water
- Rabbit cages with nest boxes, feeder and automatic nipple drinkers

Fish Room

- Aquariums with capacity of 45-50 lit (volume of water) complete with light, filters and heater
- Aquariums with capacity of 110-130 lit (volume of water) complete with light, filters and heater
- Marine aquarium
- Nano-quarantine/hospital tanks (15-20lit)
- Hydrometer/salinometer
- Large breeders
- Aquarium thermometers
- Aquarium immersion heaters
- Water testing set
- Water testing strips cans
- Aquarium magnetic glass cleaners
- Airstones
- Airline elbows
- Airline tees
- Airline pressure regulators
- Airline non-return valves
- Aquarium submersible pump for water changes
- Air pumps

- Aquascaping substrates
- Aquascaping things, scissors and pincers
- Clip-on lighting
- Reverse-osmosis system with storage tank
- Fish nets

Tools and Machinery

- String trimmer
- Chainsaw
- Petrol transport tank
- Diesel transport tanks
- Irrigation pipe punch
- Battery operated sprayer
- Industrial bins
- Manual sulfurator
- Pesticide face mask
- Grass cutting apron
- Ear muffs
- Grass cutting visor
- Wheel burrow
- Watering can
- Chainsaw
- String trimmer
- Diesel rotovator
- Inter row cultivator
- Lawn mower
- Hedge trimmer
- 10-20 L rotary fertiliser/seed spreader
- Shovel head hoe (zappun)
- Hoe (mgħażqa)
- Fork hoe
- Dibbers
- Riddle
- Rake
- Pruning shears (secateurs)
- Lopper
- Spades
- Garden trowels
- Grafter knife
- Pruning saws
- Sickles
- Folding hand saws
- Pocket knife
- Hammer
- Sledge hammer
- Side cutter
- Heavy duty craft knife
- Wire brushes
- Large shifting spanner
- Hack saw
- Screw drivers set
- Pliers

- Spanner set
- Allen keys
- Socket ratchet
- Heavy duty shelving
- Sack trolley
- Long nose pliers
- Adjustable spanner
- Drill bits
- Measuring tape
- Cordless hammer drill
- PVC pipe cutter
- Gas flame torch burner
- Flint spark lighter
- Refillable LPG cylinder

Irrigation System

- Agricultural sprinklers (friefet)
- Drip tape
- Irrigation pipes and several fittings
- Ball valves
- Submersible/centrifugal irrigation pump and several fittings
- Adjustable fertiliser dozers or water powered dosers
- Irrigation timer
- Agricultural water pump.

Scientific Apparatus

- Soil testing kit
- pH soil/temp probe
- One piece regular soil auger
- Microscope slides*
- USB microscope pack
- Iodine solution for testing for starch (photosynthesis)
- Simple potometer
- Digital balance
- Glass beakers
- Hand magnifiers
- Retort Stands and clamps
- Glass rods
- Polyethene wash bottles
- Beakers
- Petri dishes
- Filter papers
- Safety glasses
- Stainless steel spatulas
- Plastic test tube racks
- Wooden test tube holder
- Soda glass boiling tubes with rim
- Economy test tubes (16x100mm)
- Gragnell trays
- Student dissection kit
- Borosilicate glass measuring cylinders

- Disposable Pasteur pipettes
- Glass funnels
- Conical flasks
- Test tubes brushes
- Hotplate
- Wire gauze
- Tripod
- Heat mat
- First Aid box
- Eye washing station
- Dicot flower model
- Fish model
- Chicken model
- Plant posters
- Handheld EC/TDS metre
- Handheld pH metre

**Root apical meristem*

- Shoot apical meristem
- Monocot root cross section
- Dicot root cross section
- Monocot stem showing vascular bundle
- Dicot stem showing vascular bundle
- Annual rings woody stem
- Dicot leaf cross section
- Lower epidermis (leaf) showing stomata
- Typical plant cell
- Sieve tube element phloem longitudinal section
- Cell division - mitosis
- Cell division - meiosis
- Parenchyma cells
- Collenchyma cells
- Sclerenchyma cells
- Xylem cells longitudinal section
- Root tip with hair roots
- Case to hold the slides

Animal grooming

- UV steriliser
- Nail cutter
- Coat brushes
- Clipper
- Coat trimming shears
- Coat combs
- Stripping knives
- Pet coat drier with variable speed on stand

Animal health

- Stethoscope
- Pet rectal thermometer
- Vaccine injector

Apiculture

- Beehive boxes with supers
- Nucleus boxes
- Rapid bee feeder
- Frame wire
- Wire crimper
- Wire embedder
- Smoker and fuel
- Hive tools, spatulas, and bee brushes
- Centrifugal honey extractor
- Honey ripener
- Honey strainer
- Wax melter
- Frame holder
- Uncapping knife
- Queen excluder
- Excluder cleaner
- Ventilated full body suit
- Bee keeping veil
- Bee keepers' gloves
- Convection oven

Poultry

- Free range barn or cage system for layer hens
- Poultry drinkers
- Poultry feeders
- Chick drinkers
- Chick feeders
- Automated incubator
- Hen nesting boxes
- Electric brooder
- Egg candler
- Poultry crates
- Egg cartons
- Poultry cone

General pets

- Dwarf rabbit cages
- Small rodent cages
- Aviary
- Harnesses for rabbits, small dogs/cats, medium dogs and large dogs
- Small dog/cat transport cage
- Bird cages

Other Requirements

- Fire alarm system
- Fire-fighting equipment
- Intruder alarm system
- Telephone and data network (internet access)
- Access to computer laboratories
- Digital cameras (video and photo) with tripod
- External hard drive
- External pen drive storage
- External DVD/CD writer