



**MCAST**

**MQF/EQF Level 6**

**AG6-03-22**

**Bachelor of Science (Honours) in Fisheries and  
Aquaculture**

**Course Specification**

## **Course Description**

This programme of study provides learners with a very thorough understanding of aquaculture and fisheries sciences and includes a wide range of aspects that will provide a better understanding of these sectors. The study units revolve around the aquaculture and fisheries sciences to provide a thorough understanding of the production and management of aquaculture facilities, and the highly complex field of fisheries. This programme of study is intended for those who want to delve deeper into the fish management sciences and who want to start a career in this sector.

## **Programme Learning Outcomes**

At the end of the programme the learner will be able to:

- 1. Understand the production processes of aquaculture facilities.*
- 2. Evaluate the operations of aquaculture enterprises.*
- 3. Assess the fishing industry's management, economics and governance.*
- 4. Evaluate different fishing practices and technologies.*

## **Entry Requirements**

MCAST Advanced Diploma in Animal Management and Veterinary Nursing

OR

MCAST Advanced Diploma in Fish Management

OR

MCAST Advanced Diploma in Horticulture

OR

2 A-Level passes and 2 I-Level passes

## Key Information

Awarding Body - MCAST

Accreditation Status - Accredited via MCAST's Self Accreditation Process (MCAST holds Self-Accrediting Status as per 1st schedule of Legal Notice 296/2012)

Type of Programme: Qualification

MQF Level	Examples of Qualifications	'Qualification' Minimum Credits Required	'Award' Credits Required
Level 8	Doctoral Degree Third Cycle Bologna Process	NA	NA
Level 7	Masters Second Cycle Bologna Process Post-Graduate Diploma Post-Graduate Certificate	90-120 60 30	Less than 30
Level 6	Bachelor <sup>23</sup> /Bachelor (Hons.) <sup>24</sup> First Cycle Bologna Process	180-240	Less than 180
Level 5	Short Cycle Qualification Undergraduate Higher Diploma Undergraduate Diploma Undergraduate Certificate VET Level 5 Programme <sup>25</sup>	120 90 60 30 60-120	Less than 60
Level 4	Pre-Tertiary Certificate VET Level 4 Programme <sup>26</sup> MATSEC Certificate	30 120 NA	Less than 120
Level 3	VET Level 3 Programme <sup>27</sup> General and Subject Certificate	60 NA	Less than 60
Level 2	VET Level 2 Programme <sup>28</sup> General and Subject Certificate	60 NA	Less than 60
Level 1	VET Level 1 Programme <sup>29</sup> General and Subject Certificate	40 NA	Less than 40
Introductory Level A	Preparatory Programme	30	Less than 30
Introductory Level B	Pre-entry Basic Skills Course	30	Less than 30

Table 1: Minimum number of credits for 'Qualifications' and parameters for 'Awards'

Fig.1: p56, Ministry for Education and Employment & National Commission for Further and Higher Education Malta (2016). *Referencing Report*, 4<sup>th</sup> Edition. NCFHE.

Total number of Hours: 4500

Mode of attendance: Full Time

Duration: 3 Years

Target audience for MCAST full-time courses is 16 to 65+

The official language of instruction at MCAST is English. All notes and textbooks are in English (except for language courses which will be in the respective language being instructed). International candidates will be requested to meet English language certification requirements for access to the course.

This course will be offered at

MCAST has four campuses as follows:

**MCAST Main Campus**

Triq Kordin, Paola, Malta

All courses except for the Institute for the Creative Arts, Centre of Agriculture, Aquatics and Animal Sciences are offered here.

**Institute for the Creative Arts**

Mosta Campus

Misraħ Ghonoq Targa Gap,

Mosta

**Institute of Applied Sciences,**

**Centre of Agriculture, Aquatics and Animal Sciences,**

Luqa Road, Qormi

**Gozo Campus**

J.F. De Chambray Street

MCAST, Ghajnsielem

Gozo

*Teaching, Learning and Assessment*

The programmes offered are vocational in nature and entail both theoretical lectures delivered in classes as well as practical elements that are delivered in laboratories, workshops, salons, simulators as the module requirements dictate.

Each module or unit entails a number of in person and/or online contact learning hours that are delivered by the lecturer or tutor directly (See also section 'Total Learning Hours').

Access to all resources is provided to all registered students. These include study resources in paper or electronic format through the Library and Resource Centre as well as tools, software, equipment and machinery that are provided by the respective institutes depending on the requirements of the course or module.

Students may however be required to provide consumable material for use during practical sessions and projects unless these are explicitly provided by the College.

All Units of study are assessed throughout the academic year through continuous assessment using a variety of assessment tools. Coursework tasks are exclusively based on the Learning Outcomes and Grading Criteria as prescribed in the course specification. The Learning Outcomes and Grading Criteria are communicated to the Student via the coursework documentation.

The method of assessment shall reflect the Level, credit points (ECTS) and the schedule of time-tabled/non-timetabled hours of learning of each study unit. A variety of assessment instruments, not solely Time Constrained Assignments/Exams, are used to gather and interpret evidence of Student competence toward pre-established grading criteria that are aligned to the learning outcomes of each unit of the programme of study.

Grading criteria are assessed through a number of tasks, each task being assigned a number of marks. The number of grading criteria is included in the respective Programme Specification.

The distribution of marks and assessment mode depends on the nature and objectives of the unit in question.

Coursework shall normally be completed during the semester in which the Unit is delivered.

Time-constrained assignments may be held between 8 am and 8 pm during the delivery period of a Unit, or at the end of the semester in which the Unit is completed. The dates are notified and published on the Institute notice boards or through other means of communication.

Certain circumstances (such as but not limited to the Covid 19 pandemic) may lead Institutes and Centres to hold teaching and assessment remotely (online) as per MCAST QA Policy and Standard for Online Teaching, Learning and Assessment (Doc 020) available via link <https://www.mcast.edu.mt/college-documents/>

The Programme Regulations referenced below apply. (DOC 005 available at: link <https://www.mcast.edu.mt/college-documents/>

### Total Learning Hours

The total learning hours required for each unit or module are determined as follows:

Credits (ECTS)	Indicative contact hours	Total Student workload (hrs)	Self-Learning and Assessment Hours
1	5 - 10 hrs	25 hrs	20-15 hrs*
2	10 - 20 hrs	50 hrs	40-30 hrs*
3	15 - 30 hrs	75 hrs	60-45 hrs*
4	20 - 40 hrs	100 hrs	80-60 hrs*
6	30 - 60 hrs	150 Hrs	120-90 hrs*
9	45 - 90 hrs	225 hrs	180-135 hrs*
12	60 - 120 hrs	300 hrs	240-180 hrs*

\* The 'Self-Learning and Assessment Hours' amount to the difference between the contact hours and total student workload.

### Grading system

All MCAST programmes adopt a learner centred approach through the focus on Learning Outcomes. The assessment of MCAST programmes is criterion-referenced and thus assessors are required to assess learners' evidence against a pre-determined set of Learning Outcomes and assessment criteria.

For a student to be deemed to have successfully passed a unit, a minimum of 50% (grade D) must be achieved. In case of part time programmes, the student must achieve a minimum of 45% to successfully pass the unit.

All units are individually graded as follows:

A\* (90-100)

A (80-89)

B (70-79)

C (60-69)

D (50-59)

Unsatisfactory work is graded as 'U'.

Work-based learning units are graded on a Pass/Fail basis only.

Detailed information regarding the grading system may be found in the following document: DOC 005 available at: link <https://www.mcast.edu.mt/college-documents/>

### Intake Dates

- MCAST opens calls for application once a year between July and August of each year for prospective applicants residing in MALTA.
- Applications to full-time courses from international students not residing in MALTA are accepted between April and Mid-August.
- For exact dates re calls for applications please follow this link <https://www.mcast.edu.mt/online-applications-2/>

### Course Fees

MCAST course are free for Maltese and EU candidates. International candidates coming from outside the EU need to pay fees for the respective course. Course fees are set on a per-level and course duration basis. For access to course fee structure and payment methods please visit <https://www.mcast.edu.mt/fee-payments-for-non-eu-candidates/>.

### Method of Application

Applications to full-time courses are received online via the College Management Information System. Candidates can log in using Maltese Electronic ID (eID) or European eIDAS (electronic identification and trust services) to access the system directly and create an account as the identity is verified electronically via these secure services.

Non-EU candidates need to request account creation through an online form by providing proof of identification and basic data. Once the identity is verified and the account is

created the candidate may proceed with the online application according to the same instructions applicable to all other candidates.

Non-EU candidates require a study visa in order to travel to Malta and joint the course applied for. For further information re study-visa please access <https://www.identitymalta.com/unit/central-visa-unit/>.

For access to instructions on how to apply online please visit <https://www.mcast.edu.mt/online-applications-2/>

*Contact details for requesting further information about future learning opportunities:*

**MCAST Career Guidance**

Tel: 2398 7135/6

Email: [career.guidance@mcast.edu.mt](mailto:career.guidance@mcast.edu.mt)



### **Current Approved Programme Structure**

Unit Code	Unit Title	ECTS	Year	Semester
ASFSH-503-2207	Introducing Fisheries and Fishing	3	1	A
ASFSH-506-2208	Fish Anatomy and Physiology I	6	1	A
ASFSH-506-1523	Marine Zoology	6	1	A
ASFSH-506-1516	Fisheries, Economics and Marketing	6	1	A
ASAQA-506-1506	Aquaculture Systems Design and Engineering	6	A	B
ASAQA-506-1507	Aquaculture, the Environment and Sustainability	6	A	A
ASFSH-506-1521	Fisheries, Biology and Ecology	6	A	B
ASFSH-506-1522	International Fisheries Management	6	A	B
CDKSK-503-1907	English I	3	A	A
CDKSK-604-1909	Entrepreneurship	4	A	B
CDKSK-602-2105	Community Social Responsibility	2	A	B
ASAQA-506-1501	Aquaculture, Biotechnology and Genetics	6	A	A
ASFSH-506-2209	Fish Anatomy and Physiology II	6	2	A
ASWBL-509-2202	Work-Based Learning	9	2	B
ASPRJ-506-1526	Research Project	6	2	B
ASAQA-506-1502	Aquaculture, Management and Policy	6	B	B
ASAQA-506-1503	Aquatic and Coastal Environments	6	B	A
ASAQA-506-1504	Aquatic Health and Disease	6	B	A
ASFSH-506-1515	Fish Nutrition, Formulation and Feeding	6	B	B
ASFSH-506-1518	Fishing Practice and Technology	6	B	B
ASAQA-506-1505	Aquaculture Production and Husbandry	6	B	A
CDKSK-503-1908	English II	3	B	A
ASFSH-606-2206	Maritime Law	6	3	A
ASVTN-603-2218	Business Management	3	3	A
ASFSH-606-1524	Fish Processing, Quality and Safety	6	3	B
ASFSH-603-2210	Development of Land and Sea Based Activity	3	3	YEAR
ASFSH-606-1525	Advanced Fisheries Studies	6	3	B
ASFSH-612-1526	Water Analysis in Fish Farming	12	3	YEAR
ASAQA-606-1508	Recirculating and Integrated Aquaculture	6	3	A
ASFSH-606-2211	Fisheries Governance	6	3	B
ASDIS-612-1501	Dissertation	12	3	YEAR
<b>Total ECTS</b>		<b>180</b>	<b>/</b>	<b>/</b>

This course will be delivered on a back-to-back system.

## **ASFSH-503-2207: Introducing Fisheries and Fishing**

Unit level (MQF/EQF): 5

Credits: 3

Delivery Mode: Face to Face

Total Learning Hours: 75

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### **Unit Description**

This module is of an introductory nature and shall acquaint the students with the basics of fishing and fisheries. Through introducing the various ontological realms that deal with the study of fisheries, the students shall be able start appreciating the complexity of fisheries affairs through an integrated approach. This shall encompass the social, cultural, political, economic, and environmental affairs that collectively enable an exploratory philosophy concerning fisheries studies. This module introduces the understanding of fisheries as an evolution from a subsistence activity to a capital-oriented industry. This will be sought through a multiple-lens approach of fisheries at the global, regional and national scales.

This module shall present the students with the foundational theoretical standpoints that will be utilized throughout the whole degree. This module shall present the students with the various epistemological and ontological frameworks of the major domains that pertain to the fields of biology, economics, management, governance, social, anthropology and navigation. This shall frame the relevant conceptualizations that will be further delved into throughout the successive modules. Essentially, this module should prepare the students with the academic ability to start appreciating and criticizing the philosophical thoughts that surround the disciplines of fisheries studies.

The strength of this module further lies in its formative approach towards the comparative stance of fisheries around the world. At the heart of the module lies the discussion of fish as a source of food security and the heated debates about fish sustainability that surround the biological, economic, environmental and political discourses. This module shall also present the students with an observatory-oriented fieldwork that will enable a closer look of fisheries at the national and local levels. The interactive approach of this module through a pedagogical fusion of fieldwork and academic appraisals is central to the fundamental thinking that shall be ensued through the subsequent modules.

## Learning Outcomes

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

1. *Differentiate between different types of worldwide aquatic systems and fisheries.*
2. *Outline the main sources of aquatic products around the world.*
3. *Appraise the role of fisheries as it provides food to a wide range of communities.*
4. *Compare and contrast single-stock and mixed-species fisheries.*

## **ASFSH-506-2208: Fish Anatomy & Physiology I**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

A fish's anatomy and physiology makes it adapted to live in the habitat it has evolved to inhabit. Furthermore, a life in the sea puts certain pressures on the body of the fish that are reflected in the way it adapted its anatomy and physiology to swim through water in an effective and efficient manner.

An understanding of this is vital for learners wanting to enter the fisheries and aquaculture sectors. Having a thorough understanding of the way the body of a fish works equips the learner with the necessary tools to comprehend better the needs and requirements of fish that are being reared for harvesting. It will provide the learner with a realization of the rationale behind certain tasks in aquaculture.

The unit will focus on the anatomical and physiological processes of fish including locomotion, gaseous exchange, transport, bioenergetics, homeostasis, reproduction, hormone generation and electric ability in fish. Each physiological process will be analyzed in considerable detail so that the mechanisms of each process are understood thoroughly.

### **Learning Outcomes**

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

- 1. Examine the processes behind body musculature, buoyancy and locomotion in fish.*
- 2. Explain how gaseous exchange and transport occurs in fish.*
- 3. Outline the processes behind electro-generation and homeostasis in fish.*
- 4. Appraise reproductive anatomy and physiology, developmental stages and strategies in fish.*

## **ASFSH-506-1523: Marine Zoology**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

The sea is full of different types of organisms which live in a wide range of habitats and communities. The biodiversity in the Mediterranean Sea is considerable and efforts are continuously being expended to try and understand better and thus conserve the resources present in the sea around us.

The understanding of marine zoology is important for a number of reasons. Learners that aspire to work in the fisheries sector need to be able to identify and appraise the species that live in communities together with the target species. This will ensure that the management of fisheries is undertaken in a holistic manner and taking into consideration the whole ecosystem. This appreciation of marine species is also essential when evaluating the environmental impact of aquaculture farms.

This unit will investigate the differences in the biology between the different groups of marine vertebrates and invertebrates. This will lead the learners to start identifying different marine species that live in the Mediterranean Sea. The unit will put special emphasis on zooplankton and its vital roles in a marine ecosystem and the aquaculture industry. An overview of species invasiveness will also be provided with general discussions on the factors leading to the spread of such species and the impacts of these species on native ones.

### **Learning Outcomes**

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

- 1. Understand the differences between the biology of the main groups of marine vertebrates and invertebrates.*
- 2. Recognize a wide range of teleost and elasmobranch fish.*
- 3. Assess the roles of zooplankton in marine ecosystems.*
- 4. Identify marine invasive species in the Mediterranean Sea.*

## **ASFSH-506-1516: Fisheries, Economics and Marketing**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

This module shall provide the basis of the economic theory which will help the students to understand the economic dynamics of the fisheries sector. It shall provide an understanding of the central economic problem which deals with the issues of scarcity followed by choice. The module will look into the theory of demand and supply and how their interaction will determine market prices. Students will gain an insight with regards to the tools used by policy makers to apply the theory of demand and supply to control the market. The module will also look into the theory from the fisher's point of view and will provide an understanding of the theory of production and the various types of costs associated with it.

The module shall evaluate how micro economic theory is applied to the whole economy. It will furnish the students with an understanding of the various economic indicators used to measure the performance of the economy and the policies used to achieve goals from a macroeconomic point of view.

The objective of this module is to extend the basic economic theory (module 1) to the fisheries sector. It will provide the students with an understanding of the relationship between economic growth and environmental problems and thus the need to consider tradeoffs between material benefits and environmental preservation. It aims to gain an insight into a number of concepts that explain why a free market does not necessarily result in the best solution in relation to the environment, resulting in the need to correct such market failure by putting a monetary value on the use of the environment. These concepts will provide the basis of the theory of open access equilibrium. The latter aims to equip the students with a tool to determine the quantity of fishing effort at which point the fishers' costs are equal to the revenue. The module will look into the types of policy instruments used to control an open access resource such as fisheries.

The last part of the unit will delve into the theory of marketing and how this can be applied in the aquatic products industry. An overview of the marketing research techniques and how a marketing plan can be implemented will be provided. This will be followed by discussions on the market size and consumer purchase decisions.

## Learning Outcomes

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

1. *Understand the basic concepts and principles of micro- and macro- economics.*
2. *Apply basic economic theory to the fisheries and aquaculture sector.*
3. *Explain the important role marketing has to play in the selling of fish and other seafood.*
4. *Identify types and uses of market research.*

## **ASAQA-506-1506: Aquaculture Systems Design and Engineering**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

This unit will give a broad overview of the technical aspects of designing an aquaculture facility. The rearing and production of fish needs prior understanding of the fish's needs so that one can proceed to design a facility which is good for purpose. This designing process involves the planning and subsequent choosing of systems and their components which one deems ideal and suitable for the functions and objectives of the facility under consideration. Facilities in this case can involve sea-based fish farm, hatcheries, recirculating aquaculture systems, aquarium systems and others.

This unit aims to make the learner understand how the biology of aquatic species and engineering of holding facilities have a reciprocal effect on one another and how a very good understanding of both is essential for the appropriate rearing of any type of aquatic species.

### **Learning Outcomes**

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

- 1. Comprehend how a system's carrying capacity influences an aquaculture system design.*
- 2. Understand the piping and pumping requirements of an aquaculture facility.*
- 3. Evaluate structures that help to maintain optimum water quality.*
- 4. Evaluate systems and components used in different production stages.*
- 5. Understand how the design and structure of a fish farm are important to meet the requirements of the fish being produced.*



## **ASAQA-506-1507: Aquaculture, the Environment and Sustainability**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

The rapid increase of aquaculture worldwide has increased fears about what impact this industry is having on the surrounding environment. The aquaculture industry has a number of negative environmental externalities that has triggered research and discussion as to how such problems can be overcome. A particular aquaculture facility can be managed in such a way as to reduce its environmental impacts and thus be more sustainable. Facility location, design and day-to-day operations and decisions will substantially determine whether this facility is contributing to adverse environmental impacts.

This unit will evaluate the range of environmental impacts of aquaculture facilities including effluents, pathogen spread, biodiversity impact, etc.

Moreover, the unit will discuss the efforts being undertaken by the aquaculture industry to mitigate such impacts and how the execution of measures to reduce such impacts can influence other aspects in the sector.

### **Learning Outcomes**

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

- 1. Evaluate the impacts of aquaculture waste production on the environment and how they can be reduced.*
- 2. Understand how the siting and design of a farm can mitigate its impact on the environment.*
- 3. Discuss the environmental impacts of the spreading of escapees originating from an aquaculture facility.*
- 4. Evaluate the routes that the aquaculture industry is taking to become more sustainable.*

## **ASFSH-506-1521: Fisheries, Biology and Ecology**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

The aim of the modules on fisheries biology and ecology is to give students a broad understanding of the importance of these aspects in fisheries science.

The objective of the module on fisheries ecology and production processes is to provide an overview of how physical and biological processes drive the production of fished species, and how the environment influences the distributions and abundances of different types of commercially exploited marine species. Students will be introduced to the concepts of food chains and food webs, and thus gain an insight into the links between primary production and the production of fished species. Students will learn how the coupling of biological and physical processes on many scales governs the potential yields of fish stocks.

The module on dynamics of exploited populations will discuss how commercially exploited species reproduce, and focus on the links between life-history traits such as growth, reproduction and mortality. The module will look into critical life cycle stages, in particular the relationship between recruitment and the size of spawning populations. Understanding natural life cycles will equip students to understand how fished species as well as marine communities and ecosystems are affected by commercial fisheries. The module will introduce the concept of fishing effort, and illustrate how catches are ultimately determined by both fishing effort and natural fluctuations in the abundance of exploited species.

Successful fisheries management relies on accurate fisheries data collection and the appropriate interpretation of such data in models for fisheries evaluation. The module on fisheries data collection shall explain the concept of fish stocks, how stocks are treated as the basic management units, and the methods used to identify stocks and estimate parameters that describe their dynamics. Students will become familiar with fisheries dependent and fisheries independent data collection systems and methods used to ensure accurate parameter estimation through representative sampling. The

module will emphasize the importance of collecting data on discards and bycatches, and explain why data collection on non-target species plays an increasingly important role in fisheries science and management.

The module on models for fisheries evaluation will provide students with an overview of how to make basic quantitative assessments of fisheries, and how to calculate estimates of input parameters required for such assessments. Students will gain an insight into the importance of combining information from different sources (social, economic and biological) and how such data can be analysed to provide information required for fisheries management purposes. The module will provide students with an introduction to the challenges faced by fisheries scientists, and place an emphasis on the modelling requirements of the implementation of an ecosystem approach to fisheries management.

## **Learning Outcomes**

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

- 1. Understand the ecology of fisheries and production processes.*
- 2. Assess the dynamics of exploited populations.*
- 3. Understand the importance of fisheries data collection.*
- 4. Use models for fisheries evaluation.*

## **ASFSH-506-1522: International Fisheries Management**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

This module is central for the understanding of fisheries management and its application in different parts of the world. It looks into the various types of fishing management systems and the conceptual thinking that frames such approaches. The significance of this module lies in the proficiency that will equip students with the knowledge to engage in critical thinking of the different fisheries management practices and the structural processes within which they function. This will encompass the various management applications including an overview of the fishing capacity and effort established at national and regional levels; the introduction of Total Allowable Catches (TACs) and quotas for fish species (e.g. the Bluefin Tuna); the establishment of minimum sizes of landed fish species (e.g. the swordfish); the restriction on types of fishing gear (e.g. number of hooks, mesh sizes) and the establishment of marine protected areas and marine reserves, amongst others.

The module shall provide a theoretical understanding of the pillars of management namely traditional fisheries management and the ecosystem-based management (EBM). This will illustrate the fundamental differences between the two regimes, with an accentuation on the EBM as the emerging paradigm towards a holistic approach to natural resource management. This will stress the relevance of marine uses in their entirety as opposed to traditional management that seeks to manage the marine area on a sector basis. This will introduce students to concepts of marine spatial planning and integrated coastal zone management. Through a global analysis of the different techniques and their relevance in different contexts, this module shall present the students with an overview of the economic, political, geographical, biological, sociological and anthropological affairs that circumvent fisheries management.

The centrality of this module lies in its all-encompassing approach towards the understanding of fisheries management both as a theoretical framework and as a toolkit for the application of systems to the real-world scenario. This shall incorporate an analysis of the Common Fisheries Policy as the main management framework that establishes the legal parameters of fishing in European waters and beyond. This module shall also look into the various international and regional management organizations that deal with fisheries management (e.g. ICCAT, GFCM, FAO). Effectively, upon

completion of this module, the students will be able to appreciate the complexity of the concepts of management and underline the integration of the subject matter that will be dealt with in the various modules throughout the degree.

## **Learning Outcomes**

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

- 1. Know the difference between the various types of fishing management systems.*
- 2. Evaluate concepts related to fisheries management.*
- 3. Compare and contrast different fisheries management practices being undertaken in different countries around the world.*
- 4. Assess the sociological and anthropological aspects of fisheries management.*

## **ASAQA-506-1501: Aquaculture, Biotechnology and Genetics**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

The aquaculture industry has been increasing substantially both worldwide and in Malta. This is partly due to developments in biotechnology and genetics which have assisted in optimizing the growth of fish in confined conditions. A detailed understanding of fish genetics will help in planning and conducting a successful breeding program that will further express traits essential to make the aquaculture industry more profitable. Thus, aquaculture will keep contributing to an ever-increasing demand while making optimal use of the resources allocated.

This unit will cover the principles related to genetics as they relate to the fish husbandry sector. This will lead the learner to understand how such principles can be applied in fish breeding and, thus, how aquaculture can exploit such principles for the benefit of the industry. The concept and industrial application of concepts such as inbreeding, gynogenesis, androgenesis, crossbreeding, hybridization and sex reversal will be evaluated.

### **Learning Outcomes**

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

- 1. Understand general principles of gene variation and expression.*
- 2. Understand general principles in genetics as they are used in the aquaculture sector.*
- 3. Discuss the importance of fish sex reversal.*
- 4. Know the basic principles of breeding program design.*

## **ASF5H-506-2209: Fish Anatomy and Physiology II**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

This unit builds on the content of 'Fish Anatomy & Physiology I' and continues to undertake a thorough analysis of the biological systems of fish. The unit will commence with neurophysiology of fish, and is followed by various aspects of behavioural physiology such as their role in communication, social interactions and migrations. An outline of envenomations in fish will ensue. This will provide the learner with a suitable grasp of how the physiology of fish is pegged to the behaviour necessary for the undertaking of processes crucial for its life cycle. The unit will then delve into the roles and regulations of hormones in the fish's body and how physiology can be related to speciation and fish populations.

### **Learning Outcomes**

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

1. *Evaluate the major processes of neurophysiology in fish.*
2. *Outline behavioural physiology and envenomations in fish.*
3. *Explain regulation, control and the role of hormones in fish.*
4. *Relate physiology, speciation, and populations in fish.*

## **ASWBL-509-2202: Work-Based Learning**

Unit level (MQF/EQF): 5

Credits: 9

Delivery Mode: Face to Face

Total Learning Hours: 225

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### **Unit Description**

This Unit presents comprehensive, specialized, factual and theoretical knowledge that engages a range of cognitive and practical skills required to develop creative solutions to abstract problems in the context of work-based scenarios. Learners will be able to demonstrate that they have the necessary skills to be able to understand the relevance of industrial work-based experience, to exercise management and supervision skills especially where there is unpredictable change and to be able to plan, undertake and review their own placement performance as well as of others within the organisation. Learners will familiarise themselves with important aspects of planning and negotiating for a work-based experience, whilst taking into account business constraints and possible conflicts of interest whilst exercising autonomy and responsibility in managing their expectations of work-based learning when faced with the specific requirements of their work experience.

Work-based Experience is a unit that while implemented as a stand-alone course of studies, it equips the learners with several other skills, including Entrepreneurship, Business Planning and Intrapersonal & Interpersonal Skills, preparing learners towards the successful completion of their studies. This strategy builds learners' skills and knowledge in their chosen career path or furthers their study within the area of interest.

The Unit is relevant to learners wishing to further develop their knowledge and understanding of the benefit of work-based experience in an industrial setting, that various industrial sectors present in Malta and Europe and the ways with which they can access these various career opportunities. On completion of the Unit, learners will have grasped the three step process to preparing for work-based experience: prepare, undertake and review. They will obtain insight into what steps are required in the application process, what resources they require to undertake the placement and the limitations they need to consider before commencing their placement. They will also develop those skills necessary to establish and maintain working relationships with others, including awareness of employment, social and ethical issues, conveying structured and coherent ideas to peers, supervisors and clients using judgmental skills, and communicating qualitative and quantitative information with some autonomy enabling them to contribute to the organizational team. Furthermore, learners will gain knowledge of various methods with which they can keep track of their progress, as well as methods of how they can review their performance for self-improvement.



Learners will also be able to seek guidance from a mentor or supervisor, contribute their suggestions to business and provide recommendations on how such placements can be improved.

Learners will carry out a placement relevant to their areas of study and interest. Industry-based training is developed by the learner together with the workplace coach and/or WBL mentor and workplace mentor to guide the learner's work-based learning experiences and assist in evaluating achievement and performance, in both the stand-alone WBL unit as well as in the practical work placement component

## **Learning Outcomes**

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

- 1. Prepare for the performance of multiple tasks and responsibilities related to them.*
- 2. Perform several tasks at the workplace in a timely and effective manner.*
- 3. Establish working relationships with colleagues and superiors.*
- 4. Analyse own work experience for further personal performance development.*

## **ASPRJ-506-1526: Research Project**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

This unit prepares students for their independent research project linked to Fisheries or Aquaculture. In both cases, students are guided in the process of carrying out a research enquiry from initial concept to final report. The unit will demonstrate methodological approaches to collecting and analysing data and will address ethics in research.

Another key aspect of this unit is the development of a working relationship between the student and their supervisor(s) and this will be addressed through the recommended timeline and activities.

Finally, the unit will guide students in how to write critically and objectively in producing their final project and how to correctly cite and reference the work of others in their own original work.

### **Learning Outcomes**

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

- 1. Develop a research enquiry from initial objectives and a review of others work, through the proposed research.*
- 2. Complete the research through to the final report.*
- 3. Evaluate findings and results of research project.*
- 4. Present the proposal and findings of the project.*

## **ASAQA-506-1502: Aquaculture, Management and Policy**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

Good management of an aquaculture facility is vital for the effective and efficient operation of the enterprise. This should give rise to increased productivity and maximization of resource utilization. But this will depend on the manager's understanding of the problems and on the right decisions that s/he will take in light of the present policies, economics of production, management of human resources and other factors.

This unit complements many of the other units delivered as part of this course. The good management of production and husbandry, of fish health, of breeding programs etc. are covered in other units. Good management of these aspects of an aquaculture facility is essential and will can either make or break the enterprise under consideration.

This unit will, rather, focus on management of aquaculture aspects not particularly related to the rearing of fish. Enterprise costs, human resource management and decision-making tools are three major aspects of aquaculture management that will be covered in this unit. Moreover, the aquaculture industry as it is regulated by various policies and legislations will be discussed. This will be done by understanding the evolution of aquaculture policy throughout the years and how the present aquaculture policies and strategies are impacting the industry.

### **Learning Outcomes**

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

- 1. Understand the economics of production of an aquaculture facility.*
- 2. Appraise the decision support systems utilized in an aquaculture facility.*
- 3. Understand how changes can improve management and business performance.*
- 4. Evaluate present policies as they effect the aquaculture industry.*

## **ASAQA-506-1503: Aquatic and Coastal Environments**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

Understanding aquatic and coastal environments is essential for learners that intend to enter the aquaculture and/or fisheries sectors. Nowadays, these sectors are strictly regulated to minimize their environmental impacts. Hence, a good understanding of the aquatic and coastal environments will provide the learner with comprehensive knowledge of the subject matter to enter the sector equipped with the necessary tools to contribute to a more sustainable sector.

The unit will first provide an overview of the factors that contribute to the coastal form and processes. This will include investigations on geology, geomorphology and ocean dynamics. Subsequently, the ecosystems found in the Mediterranean Sea will be evaluated. The dynamics between the different components and levels of these systems will be analyzed and the effects of habitats on life-forms discussed.

The unit will then proceed to investigate Geographic Information Systems (GIS)- a widely used tool in mapping and environmental studies. The learners will be given an overview of the general concepts of the system and then shown how it can be applied in the aquaculture and fisheries sectors.

### **Learning Outcomes**

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

- 1. Understand how geology, geomorphology and ocean dynamics have an effect on coastal form and processes.*
- 2. Understand the differences between the ecosystems found in rocky shores, soft shores and marine systems.*
- 3. Understand the basic principles of Geographic Information Systems (GIS).*
- 4. Use GIS for a range of aquatic applications.*

## **ASAQA-506-1504: Aquatic Health and Diseases**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

Maintaining the health of fish is essential in any fish rearing facility. It is of vital importance that any infectious and non-infectious ailments are diagnosed promptly and cured immediately. Furthermore, it is essential to provide ideal rearing conditions to reduce stressors that might compromise the health of the aquatic species being reared. This is vital if any aquaculture facility wants to meet its objectives and grow the fish for the market. Ill or stressed fish will decrease yield and can be economically catastrophic.

This unit will investigate a wide range of infectious and non-infectious diseases in the aquaculture industry. It will go in depth into the life-cycle, biology, conducive environmental factors for proliferation and other epidemiological factors of viruses, bacteria and fungi that infect fish and other aquatic species. For each of these, diagnostic symptoms and suitable treatments will be discussed.

The unit will also cover aspects of non-infectious diseases such as physical injuries, genetic disorders, effects of poor abiotic factors and nutritional imbalances. For each of these, diagnostic symptoms and suitable treatments will also be discussed.

### **Learning Outcomes**

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

- 1. Discuss how rearing conditions can affect the health of fish growing in an aquaculture facility.*
- 2. Describe the life-cycles and diagnostic symptoms of a range of viral, bacterial and fungal infections effecting fish growing in aquaculture.*
- 3. Describe the causes and diagnostic symptoms of a range of non-infectious disorders.*
- 4. Compare and contrast a range of treatment methods for a range of diseases and disorders.*

## **ASFSH-506-1515: Fish Nutrition, Formulation and Feeding**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

Fish nutrition constitutes an ever-increasing area of research and interest due to the fact that it is a fundamental for the success and sustainability of the aquaculture industry. Poor nutrition would lead to stress, diseases, poor fish growth and environmental pollution and thus a thorough understanding of the requirements of the fish's nutrition together with how such requirements are met is essential.

This unit provides an in depth analysis of how to determine the requirements of different aquatic species for the different nutrients. It will then proceed to discuss how such requirements are met and what are the major differences between the nutrition of a range of aquatic species at different stages of their life. The unit will also discuss the different feeds used by aquaculture and what are the needs for alternatives to be found. Thus the learner will get a good understanding of the way aquaculture provides the best nutrition for the species being cultured and how essential this is in the way of enterprise economics.

### **Learning Outcomes**

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

- 1. Understand how energetics and metabolism determine the nutrition requirements of aquatic species.*
- 2. Compare and contrast different feeds used in the aquaculture industry.*
- 3. Comprehend the general principles of larval and juvenile nutrition, formulation and feeding.*
- 4. Comprehend the general principles of grow-out and broodstock fish nutrition, formulation and feeding.*

## **ASFSH-506-1518: Fishing Practice and Technology**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

This module deals with the practical side of the fisheries sector. It is based on an appraisal of fisheries activity and its evolution from the hunter-gatherers society through to the present technology-driven systems. This shall address the various types of fishing gear used for various fisheries stocks including demersal, pelagic and benthic species. These shall encompass the fishing techniques such as the use of purse seines, trawling, dredging, gillnets, trammel nets, long-lining, demersal pots and traps, and the relevant seasons and zones within which these are utilized. An appreciation of the benthic dynamics and the geological and geomorphological profile of the seabed would be beneficial for the understanding of fishing zones. Essentially, as a prototype explication, this module shall stress the artisanal fishery constituents which are the base of the Maltese fisheries. By focusing on the main fishing seasons targeted in Malta, the students will acknowledge an in-depth knowhow of the cognitive and practical skills implemented for each type of fishery.

The strength in this module lies in the comparative analysis of the various types of methods including their benefits and drawbacks through their utilization. This is central in understanding fisheries management since it encompasses the activity in itself and how the use of the fishing gear interacts with the ecosystem at large. Students will be able to appreciate the various gear specificities and how their design has undergone changes to realize the potential of sustainable fishing. These include for example the increases in mesh sizes or hook sizes that are preventive of bycatch or undersized species, along with the technological advancement for efficient fishing.

This module shall present the students with the technological and modernization aspects regarding the different devices used for fishing (e.g. fish finder) and how they have rationalised the activity to make it more sustainable and economically efficient. It addresses the activity of fishing in its entirety commencing from the preparation of the fishing trip to the entry back into the fishing port. It shall look into the preparation of the fishing tackle, equipment and bait at the shore, to the storing of fish on board following the catch, and general information on the mending of gears. In regard to the organizational aspect of the fishing activity at sea, this module shall address the

elements of crew management. This will focus on the various roles and responsibilities assigned during a fishing trip.

This Unit involves a considerable amount of practical substance, hence, the pedagogy will include direct observation of fishing activity and potential hands-on fieldwork. This module is of fundamental importance since it is framed within a sustainable framework approach that encompasses the social, economic and environmental parameters of the fishing activity and the techniques implemented along with the managerial competences that are necessary for a holistic comprehension within the module of fishing practice and technology.

## **Learning Outcomes**

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

- 1. Understand how fishing technology evolved throughout the years.*
- 2. Evaluate various fishing methods that are currently being utilized.*
- 3. Evaluate the present modernization and technological advancement in the current fishing gear and technological equipment being developed.*
- 4. Compare and contrast the different types of vessels used for fishing.*



## **ASAQA-506-1505: Aquaculture Production and Husbandry**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

The production of fish is a process that involves the optimization of numerous biotic and abiotic factors that will provide the ideal conditions for a particular fish species to grow. The production and husbandry of different fish species is different and depends on the biology and life-cycle of the species under consideration. Furthermore, different life stages of a particular species require specialized conditions and thus specific husbandry tasks in order for the fish in that life stage to grow well.

This unit will cover the above for the commonest aquaculture species in the Maltese Islands. The production and husbandry of these species will be evaluated from the egg/juvenile to harvesting.

Husbandry of the fish species does inevitably come across some challenges of a varied nature (biological, systematic, logistical, etc.) This unit will provide an overview of the common problems arising during fish production and will suggest solutions to these different problems.

### **Learning Outcomes**

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

- 1. Evaluate the factors involved in the selection of species to be reared in an aquaculture facility.*
- 2. Understand how the different stages in the life cycles of algal and invertebrate species are managed in the aquaculture sector.*
- 3. Understand how the different stages in the life cycles of various fish species are managed in the aquaculture sector.*
- 4. Recommend solutions for problems that might arise in the production and husbandry of different aquaculture species.*

## **ASFSH-606-1524: Fish Processing, Quality & Safety**

Unit level (MQF/EQF): 6

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

The processing of fish and other seafood is a well-developed industry in various countries and holds promising potential for fish producers and other entrepreneurs that want to venture into this sector. Fish can be processed using various techniques and a very wide range of products can be attained using these different methods. The unit starts by giving a thorough overview of the biochemical processes that take place in harvested fish. This should provide a good background against which the subsequent learning outcomes are set. The second learning outcome deals with the different post-harvesting processes that are undertaken industrially and on small-scales to process the different fish products. The last two modules build on the previous two and goes in depth on the techniques and measurements used to determine the fish quality parameters. The various checks and balances and legislations followed to ensure safe fish products are covered in the last module.

### **Learning Outcomes**

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

- 1. Know a range of biochemical processes that take place in harvested fish.*
- 2. Be familiar with post-harvesting processes in the fish industry.*
- 3. Understand how fish quality is determined.*
- 4. Be familiar with systems utilized to ensure safety of fish products.*

## **ASFSH-606-1525: Advanced Fisheries Studies**

Unit level (MQF/EQF): 6

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

The objective of the module on the use of applied techniques, in particular software packages, in fisheries management is to provide an overview of how computing analyses are implemented in understanding the multiple factors that influence the stocks of different types of commercially exploited marine species. The assessment of fisheries resources often requires the collection of large volumes of long-term monitoring data, and computing packages provide the right platform as databases and analytic tools. Learners will be introduced to the concepts of sampling, statistical, graphical, parametric and spatial applications to gain an insight of the tools that are applied for fisheries management scenarios. Learners will become familiar with fisheries data collection systems and methods used to ensure accurate parameter estimation through representative sampling.

The module on the R-software will provide learners with a theoretical account of the system and its practical application through class-based exercises. In the first part of the module, the learners will learn how R, which is an open-source statistical software, is well suited to the management and analysis of large datasets. Successively, the module shall demonstrate the versatility of R in a wide variety of statistical (linear and nonlinear modelling, classical statistical tests, multi-variate analysis) and graphical techniques, and its application in regional fisheries management with a specific emphasis on how it is utilized at the Mediterranean level. Learners will gain an insight into the importance of combining information from different sources (social, economic and biological) and how such data can be analyzed to provide information required for fisheries management purposes. Given its versatility and ubiquity, a working understanding of R is an important asset for learners of fisheries science. By the end of this course, learners will be able to use R for data manipulation, the generation of basic descriptive statistics and the implementation of statistical analysis.

Successful fisheries management and ecosystem-based management are also implemented through spatial analysis of marine areas and fisheries ecosystems. Managers and scientists are increasingly using geographic information systems (GIS) to

manage, map and analyze the resources. Learners will learn how GIS as the main platform for spatial evaluations offers a way to view, query, interpret, and visualize various sorts of spatial data to reveal geographic relationships, patterns, and trends in fisheries management. Through practical case studies, learners will learn how to create shapefiles and spatial layers, and apply geometric tools to illustrate variables such as fishing effort, density and type of fishing. By the end of the course, the learners will learn how to produce maps, charts and analytical reports derived from the data stored in a GIS to explain spatial patterns and relationships.

## **Learning Outcomes**

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

- 1. Understand the importance of various software techniques for adequate fisheries management.*
- 2. Evaluate the sampling methodology used in fisheries management.*
- 3. Use the R-software to develop fisheries statistics, graphs and analysis.*
- 4. Use the GIS software to develop spatial modelling of fishing activity and density.*

## **ASFSH-612-1526: Water Analysis in Fish Farming**

Unit level (MQF/EQF): 6

Credits: 12

Delivery Mode: Face to Face

Total Learning Hours: 300

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### **Unit Description**

The unit commences with an overview of the structure of the atom to help them understand the major types of bonding. The students are then given a broad overview of the main types of chemical reactions encountered.

Some basic principles of physical chemistry, such as chemical equilibria, are briefly reviewed, with the purpose of helping the students to appreciate the importance of chemical changes.

Furthermore, an overview of some basic concepts of organic chemistry are provided to help students understand biological organic molecules such as carbohydrates, fats, etc. and to appreciate that physiological phenomena such as digestion are, in fact, organic reactions.

This unit aims to equip learners with the skills and knowledge associated with water quality analysis. Learners will gain an understanding of the factors that impact on water quality including human activity. Physical, biological and chemical factors will be investigated and a thorough understanding of their influence on water quality will be gained.

Analytical chemistry plays a key role in identifying chemical substances in a mixture and detecting trace elements. There are many applications of analytical chemistry particularly in monitoring the quality of water in the aquaculture and other fish-related sectors.

Determination of unknown quantities of a substance requires mathematical and practical skills that ensure accuracy. This often requires standards that can be used as reference points so that comparisons can be made with the unknown substance to determine its identity or quantify its value. For example, determination of the unknown concentration of a solution requires standard solutions with known concentration. Preparations of primary and secondary standard solutions require calculating the amount of solids needed for making up the stock solution. This stock

solution can also be diluted to make a series of solutions with different concentrations. In this unit, the learners will discover the importance of standard solutions and the methods used to accurately determine the unknown concentration of substances.

## Learning Outcomes

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

1. *Relate the chemical and physical properties of elements to the atomic structure and distinguish between different types of chemical reactions.*
2. *Demonstrate knowledge of basic principles of physical chemistry.*
3. *Review the properties and uses of organic compounds.*
4. *Measure the factors that impact on water quality.*
5. *Perform quantitative analysis using standard solutions.*
6. *Use spectroscopic techniques to identify and quantify substances.*
7. *Use chromatographic techniques to separate, identify and quantify substances.*

## **ASAQA-606-1508: Recirculating and Integrated Aquaculture**

Unit level (MQF/EQF): 6  
Credits: 6  
Delivery Mode: Face to Face  
Total Learning Hours: 150

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### **Unit Description**

Recirculating aquaculture is a relatively efficient way to rear fish. The understanding of the processes, dynamics and chemistry of the system are essential in the development and maintenance of such systems. It is thus that the unit dedicates the first two units to go in depth on the design and components of the system. These modules will cover the different available options for the different components and the way they can be integrated in the system. Waste management, an extremely vital link in a recirculating system, is dealt with extensively together with the needed operations and monitoring options. The unit branches into other systems that rely on recirculating aquaculture for their operation and goes into detail about the components, design and execution of aquaponics and polyculture setups. This will provide a holistic and complete account of the current and potential uses of recirculating aquaculture as a closely controlled and efficient way to grow fish with the possible integration with the cultivation of plants or rearing of other animals.

### **Learning Outcomes**

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

- 1. Explain how a re-circulating aquaculture system is set-up.*
- 2. Describe ways how waste is managed in a recirculating system and how system is maintained.*
- 3. Define the rationale behind polyculture systems.*
- 4. Explain the principles behind the operation of an aquaculture polyculture.*

## CDKSK-503-1907: English

Unit level (MQF/EQF): 5

Credits: 3

Delivery Mode: Face to Face

Total Learning Hours: 75

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### Unit Description

This unit is intended to be run in the first semester of the first year of undergraduate degree programmes and consolidates prior knowledge, skills and competences in English reading, writing, listening and speaking by further strengthening the more academic functions of the language.

English I is intended to be an EAP (English for Academic Purposes), focusing specifically on improving learners' awareness of, and familiarity, with the core skills necessary for successful academic reading and writing in English, especially preparing them for the rigours of extended writing by research and the reading of academic sources of information.

Learners will become familiar with academic features of style and the principles and mechanics of good text structure. They will also learn how to consult, understand and use secondary material from academic sources within their field of study and effectively integrate it as part of a larger argument or body of work.

### Learning Outcomes

Upon completing the unit, learners should be able to:

1. *Recognise the form, content and style of academic texts.*
2. *Use an academic style of writing when working on assignments and dissertations.*
3. *Reproduce secondary content by means of direct and indirect quoting methods.*
4. *Apply proper referencing conventions when citing secondary content.*



## CDKSK-503-1908: English II

Unit level (MQF/EQF): 5

Credits: 3

Delivery Mode: Face to Face

Total Learning Hours: 75

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### Unit Description

This unit is intended to be run in the second semester of the second year of undergraduate degree programmes and consolidates prior knowledge, skills and competences of Academic English by further strengthening reading, writing, listening and speaking skills as determined by the rigours of pre-dissertation research.

English II is targeted at learners who have successfully completed their degree programme's first year and exposes undergraduate students to a higher level of critical reading and writing skills demanded in the second and final years of the degree programme. This usually involves the identification and select reading of academic texts, their review and their eventual use in a research proposal, dissertation and academic presentation.

It is also the objective of this unit to train learners to be more aware of, and proficient in, spoken Academic English as this becomes a key requirement at this level of studies.

### Learning Outcomes

**Upon completing the unit, learners should be able to:**

1. *Evaluate academic sources of information when working on own dissertation.*
2. *Produce texts of an academic nature using appropriate language and style.*
3. *Communicate verbally in a manner which conveys proficiency of the subject being researched.*
4. *Respond effectively to key questions in relation to research in own field.*

## CDKSK-604-1909: Entrepreneurship

Unit level (MQF/EQF): 6

Credits: 4

Delivery Mode: Face to Face

Total Learning Hours: 100

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### Unit Description

The working definition of '**entrepreneurship**' employed in this unit is that stated by the European Commission: "*Entrepreneurship refers to an individual's ability to turn ideas into action. It includes creativity, innovation and taking calculated risk, as well as the ability to plan and manage projects in order to achieve objectives. This supports everyone in day-to-day life at home and in society, makes employees more aware of the context of their work and better able to seize opportunities, and provides a foundation for entrepreneurs establishing a social or commercial activity*" (Entrepreneurship in Vocational Education & Training, June 2009).

In line with this definition, the unit places an emphasis on fostering a mind-set that *entrepreneurship* is the vehicle that drives *creativity* and *innovation*. The learner will, amongst others, be encouraged to gain an insight as to how to investigate customer needs and markets to generate an innovative idea for a start-up; participate in the realistic simulation of the creation of a start-up<sup>1</sup>; create and pitch sections of a business plan, as well as draft sections of a business plan for an identified business idea.

The assessment of the unit is designed in a way to provide an opportunity for learners to strengthen transversal competencies which UNESCO highlights as necessary for the 21<sup>st</sup> century. These include intrapersonal skills, interpersonal skills, critical and innovative thinking, media and information literacy and global citizenship.

Learners with different backgrounds and experiences are required to contribute actively in a team to prepare the necessary work towards initiating a successful business venture.

In this unit, learners will become familiar not only with the main theories related to entrepreneurship and business start-ups but will have the opportunity to explore,

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<sup>1</sup> 'Doing effective entrepreneurship' is firmly grounded in theory, yet the *chalk and talk* delivery mode is not promoted in this unit. Rather, *actionable theory through practice* is strongly encouraged. *Realistic simulations*, limited not only to in-class activities such as *discussions* of the problems faced in the different phases of a business, especially in the process of commercialisation of innovative products and services, and *on-paper* creative management strategies, are considered essential.

interact and learn from a number of first-hand situations. The challenges of working with diverse team members will provide the learners not only with the possibility to look at entrepreneurship ideas from different perspectives, but also to come up with more creative, original and feasible solutions to challenges that will arise.

The practical and realistic element of the unit will allow learners to engage and interact with different stakeholders from industry and public institutions. This real-life interaction will provide the ideal set up to link theory with practice in the real world. Learners are encouraged to get out of their comfort zone and explore their entrepreneurial spirit by combining creativity, innovation and risk taking to help seize an opportunity, improve current situations or solve problems they encounter in the real world.

### **Learning Outcomes**

**On completion of this unit the learner will be able to:**

- 1. Understand the terms “entrepreneurship” and “entrepreneur” and techniques used to generate and evaluate business ideas.*
- 2. Examine important considerations while developing a new business idea.*
- 3. Apply business planning and control initiatives while developing a new business idea.*
- 4. Contribute effectively in a team to develop a concept prototype of a feasible product/service idea.*

## **CDKSK-602-2105: Community Social Responsibility**

Unit level (MQF/EQF): 6

Credits: 2

Delivery Mode: Face to Face

Total Learning Hours: 50

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### **Unit Description**

This unit focuses on community and social responsibility skills and provides an opportunity for learners to better understand themselves and others, as well as establish goals in life. This unit is delivered through a combination of small-group sessions (it is suggested that the number of learners do not exceed 15 learners per class), reflections and community work. Community and social responsibility skills enable learners to understand their strengths and areas that need improvement while preparing them for life, employment and to become active citizens in society.

Moving away from traditional delivery of other units, learners will be empowered to take ownership of their learning process. Hence, this unit will be delivered through a combination of workshops, small-group sessions with mentors and various opportunities to reflect.

The first set of sessions will focus on the self, the ability to work independently and important values in life. The second set of sessions will focus on working with others, dealing with diversity and conflicts. Furthermore, at the end of the sessions, learners will be introduced to the importance of active citizenship in life.

### **Learning Outcomes**

**Upon completing the unit, learners should be able to:**

- 1. Identify personal goals through self-reflection.*
- 2. Evaluate how collaboration with others can be more effective.*
- 3. Explain the importance of giving and receiving feedback.*
- 4. Contribute actively to make a difference in society.*

*For further information, please contact us on [information@mcast.edu.mt](mailto:information@mcast.edu.mt)*