

BSc (Hons) Aquaculture (Full-Time) (with 6-month Internship) - A337

1. Objectives

Aquaculture is “aquatic agriculture”, also known as fish or shellfish farming, and refers to the breeding, rearing, and harvesting of plants and animals in all types of aquatic environments, including ponds, rivers, lakes, and other freshwater systems, as well as in the ocean (mariculture). Aquaculture produces food fish, sport fish, bait fish, ornamental fish, fish eggs, reptiles, crustaceans, molluscs and other invertebrates, as well as sea vegetables and algae for food, pharmaceutical, nutritional, agrochemical, and other biotechnology products.

Aquaculture is recognized as the fastest growing food production system in the world, and is considered to be the best solution to the present dependency on wild fish stocks for seafood. With about 85 % of world fish stocks being fully exploited or overfished, huge investments are being made in the aquaculture sector to cater for the increasing demand for seafood from the growing world population. Mauritius too has embarked on developing its Ocean Economy and Aquaculture has been identified as having the strongest, quickest, and highest potential for development. One of the major constraints to realizing this potential is the shortage of trained manpower and skills in the country in this discipline. Several Small and Medium enterprises (SMESs) have embarked on aquaculture projects with freshwater ornamental and edible fish, prawns and oysters being mostly cultured. Over the years these SMEs have thrived with limited skilled workers. Graduates from this course will cater for this demand for aqua-culturists but can well set up their own enterprise.

This programme aims to fill this gap by forming graduates that will be well trained in the key aspects of aquaculture, e.g. aquaculture systems and technologies; farming methodologies for different fish species; seafood processing, packaging and safety; agri-business, entrepreneurship and marketing. The programme includes a compulsory 6-month internship at the end of the taught component, during which the student will gain relevant hands-on experience and skills by working in either the private sector or in public institutions. The internship will also provide the student with experience of real world of work, and also learn other soft skills that will enable them to enhance their employability, and/or make their way into the entrepreneurial world.

By the end of this programme, graduates will have developed knowledge, abilities and skills to:

- Apply the scientific, economic, environmental and business principles underpinning aquaculture production;
- Identify aquatic plants and fishes suitable for aquaculture;
- Select and propose proper culture methods for different aquatic plants and animals;
- Assess the risks associated with import of aquatic plants and animals;
- Set up aquaculture systems for freshwater edible and ornamental fish;
- Monitor and evaluate water parameters in both open and closed aquatic ecosystems;
- Develop business plans for aquaculture projects;
- Farm fish, aquatic plants, and seaweeds at extensive, semi-intensive and intensive scales;
- Propose solutions and methodologies to mitigate problems encountered in and by freshwater and marine farms;
- Ensure quality of pre-harvest and post-harvest aquaculture foods;
- Demonstrate use of written and oral communication skills;
- Display people related skills - communications, interpersonal, and team working;
- Display conceptual skills - researching, collecting and organising information, problem solving, planning and organising, innovation and creativity, systems thinking and self-reliance.

2. General Entry Requirements

In accordance with General Entry Requirements for Admission to the University for Undergraduate Degrees.

3. Programme Requirements

- SC: Credit in Mathematics and Chemistry/Biology.
- At least 2 GCE 'A' Level passes in related approved Science subjects (Mathematics, Physics, Chemistry, Biology, Marine science, Food Studies, Botany, Zoology, Environmental Studies, Agriculture).

4. Programme Duration

	Normal (Years)	Maximum (Years)
Degree:	3 ½	5 ½

5. **Credits per Year:** Minimum 18 credits, Maximum 48 credits subject to Regulation 6.

6. **Minimum Credits Required for Award of Undergraduate Degree:** 107 credits

Breakdown as follows:

Degree	Credits from		
	Taught Modules	Project	Internship
	92	9	6

Students may exit with :

- Certificate after having earned 30 credits in core modules.
- Diploma after having earned 60 credits in core modules.

7. Assessment

Each module will be assessed over 100 marks (i.e. expressed as %) with details as follows (unless otherwise specified).

Assessment will be based on a Written Examination of 2-3 hour duration, carrying a weighting of 70%, and Continuous Assessment carrying 30% of total marks for AGRI modules. Continuous Assessment will be based on laboratory/field works, and/or assignments, and should include at least 1 class test. Written Examinations for all AGRI modules will normally be carried out at the end of the academic year. Semester Examinations will be carried out for modules indicated in the programme structure.

An overall total of 40% for combined Continuous Assessment and Written Examination would be required to pass a module, without minimum thresholds within the individual Continuous Assessment and Written Examination.

All students should keep a portfolio of all coursework for their respective Programme of studies and same should be made available upon request, to the Faculty/Centre Examination Office. In case students fail to submit the Portfolio to the External Examiners through the Faculty/Centre Examination Office, a penalty of 10% on all Continuous Assessment marks obtained shall apply.

Modules will carry the weightings of 1, 3 or 5 depending on their status (Introductory, Intermediate or Advanced). Weighting for a particular module is indicated within parentheses in the module code. Each module will carry credits in the range of 1 to 6. Project – AGRI 3000Y(5) will carry 9 credits. Assessment of the Internship – AGRI 4100(1) will be based on the Evaluation of the Industrial/Enterprise Mentor and the Student's Portfolio, and module will carry 6 credits. Assessment of the following modules will be based on continuous assessment of students throughout the module and/or submission of a portfolio: *Professional Development – AGRI 4101(1)* (no credits; for satisfactory completion of the module, a minimum of 40% should be achieved).

Assessment of the module WCS 2200(3) – Writing Case Studies, will be based on the write up and submission of a Case Study and Oral Presentation.

Assessment of the module AGRI 1153(1) - Effective Scientific Communication: Principles and Practice I will be based on the submission of a portfolio. For the part on WEB 2.0 tools, participation in all discussion forum on the MOODLE platform and demonstration of the use of the tools (e.g. creation of a blog) should be shown. Assessment of the module AGRI 2279(1) - Scientific Communication: Principles and Practice II, will be based on the submission of a Portfolio.

The modules: AGRI 1153(1) - Effective Scientific Communication: Principles and Practice I and AGRI 2279(1) - Scientific Communication: Principles and Practice II, will carry 2 credits and 1 credit, respectively.

Submission Deadlines for Dissertation

- First Draft: by last week day of February of the Academic Year.
- Final Copy – not later than the last week day of March of the Academic Year:
- Three copies of the dissertation (two spiral-bound copies, printed on both sides in black and white and one soft copy in a single PDF text file on electronic storage media) should be submitted to the Faculty/Centre Registry.
- In addition a soft copy of the dissertation (main body i.e. Introduction up to the last Chapter) should be uploaded on the Turnitin Platform, as a single PDF file in the appropriate class/assignment provided by the Project Supervisor by **3.00 p.m.** In case a student is allocated a Part-Time Supervisor, the class is to be created by the Programme/Project Coordinator.
- All of the above should be submitted not later than the working day (i.e. excluding Saturdays, Sundays and Public Holidays) of March of the academic year by 4.00 pm at latest unless specified otherwise in the Programme of studies.
- Failure to submit the Project/Dissertation through the Turnitin Platform will result in the dissertation of the student, whether the bound copy or the soft copy, being unreceivable.

8. List of Modules

Code	Module Name	Hr / Yr	Credits
		L+P	
AGRI 1071Y(1)	Data Handling and Research Methodology	30+30	3
AGRI 10100Y(1)	Science of Aquaculture Foods	45+15	3
AGRI 10101Y(1)	Microbiology	30+30	3
AGRI 10102Y(1)	Aquatic Plant and Animal Biodiversity	60+60	6
AGRI 10103Y(1)	Aquatic Science and Resources	45+30	4
AGRI 10104Y(1)	Introduction to Aquaculture	60+30	5
AGRI 10105Y(1)	Principles of Genetics	30+30	3
AGRI 10106Y (1)	Climate Change and Aquaculture	45+15	3
AGRI 1153(1)	Effective Scientific Communication: Principles and Practice I	30+0	2
AGRI 20100Y(3)	Natural Products and Bioactive compounds	60+30	5
AGRI 20101Y(3)	Freshwater and Marine Aquaculture Technology	60+30	5
AGRI 20102Y(3)	Aquaculture Food processing	30+30	3
AGRI 20103Y(3)	Aquaponics	30+30	3
AGRI 20104Y(3)	Aquatic Cell Biology and Biotechnology	60+60	6
AGRI 20105Y(3)	Economics and Marketing of Aquaculture Products	45+0	3
AGRI 2112Y(3)	Experimental Designs and Sampling Techniques	30+30	3
AGRI 2279(1)	Effective Scientific Communication :Principles and Practice II	15+0	1
WCS 2200(3)	Writing Case Studies	9+36	3
AGRI 20106Y(3)	Fish Nutrition and Feeds	30+30	3
AGRI 3000Y(5)	Project		9
AGRI 3142 Y(5)	Environmental Assessment and Legislation in Aquaculture	75+30	6
AGRI 30100Y(5)	Entrepreneurship and Small Business Management of Aquaculture Products	75+30	6
AGRI 30101Y(5)	Safety and Quality of Aquaculture Food	45+30	4
AGRI 30102Y(5)	Aquaculture Pests and Diseases, Risk analysis and Bio-Security	60+60	6
AGRI 30103Y(5)	Aquarium systems	30+30	3
AGRI 4100(1)	Internship	6 months	6
AGRI 4101(1)	Professional Development	15 hours	

AGRI 4101(1) - Professional Development will be included in the 6 months internship

9. Programme Plan

<u>Code</u>	<u>Module Name</u>	<u>Hr / Yr</u>	<u>Credits</u>
		<u>L+P</u>	
Year 1			
AGRI 1071Y(1)	Data Handling and Research Methodology	30+30	3
AGRI 10100Y(1)	Science of Aquaculture Foods	45+15	3
AGRI 10101Y(1)	Microbiology	30+30	3
AGRI 10102Y(1)	Aquatic Plant and Animal Biodiversity	60+60	6
AGRI 10103Y(1)	Aquatic Science and Resources	45+30	4
AGRI 10104Y(1)	Introduction to Aquaculture	60+30	5
AGRI 10105Y(1)	Principles of Genetics	30+30	3
AGRI 10106Y(1)	Climate Change and Aquaculture	45+15	3
AGRI 1153(1)	Effective scientific Communication: Principles and Practice I	30+0	2
Total			32

Year 2			
AGRI 20100Y(3)	Natural products and Bioactive compounds	60+30	5
AGRI 20101Y(3)	Freshwater and Marine Aquaculture Technology	60+30	5
AGRI 20102Y(3)	Aquaculture Food Processing	30+30	3
AGRI 20103Y(3)	Aquaponics	30+30	3
AGRI 20104Y (3)	Aquatic Cell Biology and Biotechnology	60+60	6
AGRI 20105Y(3)	Economics and Marketing of Aquaculture Products	45+0	3
AGRI 2112Y(3)	Experimental Designs and Sampling Techniques	30+30	3
AGRI 2279(3)	Effective Scientific Communication : Principles and Practice II	15+0	1
AGRI 20106Y(3)	Fish Nutrition and Feeds	30+30	3
WCS 2200(3)	Writing Case Studies	9+36	3
Total			35

Year 3			
AGRI 3000Y(5)	Project		9
AGRI 3142Y(5)	Environmental Assessment and Legislation in Aquaculture	75+30	6
AGRI 30100Y(5)	Entrepreneurship and Small Business Management of Aquaculture Products	75+30	6
AGRI 30101Y(5)	Safety and Quality of Aquaculture Food	45+30	4
AGRI 30102Y (5)	Aquaculture Pests and Diseases, Risk analysis and Bio-Security	60+60	6
AGRI 30103Y(5)	Aquarium systems	30+30	3
Total			34

Year 4			
AGRI 4100(1)	Internship	6 months	6
AGRI 4101(1)*	Professional development	15 hours	

*AGRI 4101(1) - Professional Development will be delivered before the students embark on the 6-month internship