

# **University of Plymouth**

Faculty of Science and Engineering  
School of Biological and Marine Sciences

## **Programme Specification**

**MSc Sustainable Aquaculture Systems (3606)**

September 2017

## 1. **MSc Sustainable Aquaculture Systems**

**Final award title** MSc Sustainable Aquaculture Systems on completion of 180 credits

**Intermediate award title(s):**

Postgraduate Certificate on completion of 60 credits

Postgraduate Diploma on completion of 120 credits

**UCAS code** not applicable

**JACS code** D435

2. **Awarding Institution:** University of Plymouth

**Teaching institution(s):** University of Plymouth

3. **Accrediting body(ies)** None

## 4. **Distinctive Features of the Programme and the Student Experience**

The course is closely integrated into the aquaculture industry through the inclusion of lectures from expert speakers from the industry and research projects based at, or in collaboration with, leading aquaculture organisations. Additional features include field trips to farms/feed manufacturers

## 5. **Relevant QAA Subject Benchmark Group(s)**

None

## 6. Programme Structure

All students enrol in September. The programme has a mixture of modules concerned with sustainability and specialised aquaculture related themes and is underpinned by the generic Biological Sciences postgraduate research skills and methods module. Specialisations in Aquatic Animal Health and Nutrition are presented in the Semester 1. In Semester 2 the students have an Optional 20 credit module, one of which is taken jointly with Masters in Marine Sciences.

### MSc Sustainable Aquaculture Systems

|  |   |   |
|--|---|---|
| BIO5131<br>Postgraduate Research Skills and Methods [S1] | BIO5125<br>Sustainable Use of Resources in Biological Systems [S1]  | BIO504<br>Health & Production in Aquaculture [S1] |
| BIOL5208<br>Contemporary Issues in Aquaculture [S2]      | 2 form<br>MAR529* Marine Planning *suspended 2019/20<br>MAR507 Economics of the Marine Environment<br>BIO5209 Sea Food Processing – Current Perspectives [S2] |   |
| BIO505 Research Project [Other]                          |   |   |

Shaded modules are core

## 7. Programme Aims

### 7a General Aims

The general aims of the Sustainable Aquaculture Systems programme are to:

1. provide a modular programme which is vocationally specific, intellectually challenging and relevant to the aquaculture and allied industries;
2. equip students with appropriate scientific, technical and commercial knowledge and understanding of the subject area together with the cognitive, practical and specialist skills needed in employment or further study;
3. develop students' ability to operate professionally, ethically, innovatively and autonomously within complex specialised contexts; and
4. provide students with a framework of understanding on sustainability issues.

### 7b Specific Aims (SA1-SA8)

The aims of the Sustainable Aquaculture Systems programme are to provide students with:

1. the knowledge, understanding and skills required for effective technical management within the area of aquaculture and associated sciences;
2. an awareness of the complexity, scope and inter-relationships of the scientific, technical and commercial issues involved in the sustainable management of marine resources within and beyond established farming enterprises and environmental system boundaries;

3. the ability to analyse complex situations and apply technical, critical analytical and problem solving skills to synthesise innovative responses and to deal responsibly with unpredictability;
4. skills in information gathering, interpretation, critical analysis and evaluation and the formulation of recommendations in a professional context;
5. laboratory and IT skills appropriate to sustainable aquaculture systems and operations;
6. professional communication and interpersonal skills;
7. ability to design and self-manage a research project in a relevant area;
8. skills of planning and management of learning which will enable continued professional development after the course has been completed.

## **8. Programme Intended Learning Outcomes**

### **8.1. Knowledge and understanding**

On successful completion graduates should have developed:

1. A sound framework of the concepts of sustainability applicable to biological systems
2. A theoretical set of methodologies for evaluating sustainable resource use
3. An understanding of the paradigms applied to concepts of sustainability
4. An understanding of the breadth of the aquaculture industry and its resource demands
5. An appreciation of the key drivers in maintaining profitability in commercial aquaculture and associated enterprises
6. An understanding of the fundamental principles of growth, health and development of fish and other cultured species.
7. An understanding of the importance of biotic and abiotic factors affecting aquaculture output
8. A sound framework of research skills applicable to independent research

### **8.2. Cognitive and intellectual skills**

On successful completion graduates should have developed:

1. Analytical and critical skills in contrasting the role, power and practices of different sustainability learning communities and organizations
2. Skills to critically assess current learning for sustainability practice and synthesise their own personal worldview
3. The ability to refer to and analyse case studies
4. Strategic proposals that incorporate environmental concerns into social, economic and political processes
5. The ability to learn through direct experience

### **8.3. Key and transferable skills**

On successful completion graduates should have developed the ability to:

1. Work effectively within a group as leader or member, make appropriate use of the capacities of group members and handle conflict sensitively and with confidence
2. Write clearly argued, well-structured and correctly referenced material, with precisely matching referencing and bibliography
3. Communicate in clear English, showing clarity of expression and fluency of presentation of ideas and insights
4. Use a full range of learning resources and ICT
5. Reflect on their own ideas by becoming more acquainted with unfamiliar initiatives and argument
6. Live and work in a multi-disciplinary, multi-cultural environment
7. Critically assess evidence for themselves through independent judgement
8. Improve time management and develop self-discipline.

### **8.4. Employment related skills**

On successful completion graduates should have developed:

1. Recognition of the range of employment opportunities in aquaculture
2. Independent learning and decision making
3. Critical appraisal of issues associated with the professional practice of aquaculture
4. Identification of professional skills requirements and providers
5. Specific practical skills appropriate to R and D in aquaculture.

### **8.5. Practical skills**

On successful completion graduates should have developed:

1. Prepare well-supported and critical (written and oral) analyses of theory and empirical evidence
2. Formulate proposals aimed at dealing with the complexity of a range of issues and situations
3. Formulate a conceptual framework and use a range of information sources in research
4. Work in a multi-disciplinary team and relate to new cultural environments
5. Elaborate and communicate proposals, evaluations and strategies.

## **9. Admissions Criteria, including APCL, APEL and DAS arrangements**

The Programme Leader (who is responsible for admissions) will use the criteria below as guides in making their admissions decisions. Wherever possible, established relationships or equivalencies to other international qualifications will be used in making decisions. However, the admissions policy for this course is based upon the principle that students will be admitted if we believe that they can benefit from the experience, and this principle will be used to make decisions where equivalencies are not available.

Students admitted to the MSc course would normally be expected to have a good Honours degree in a relevant science subject e.g. biology, environmental sciences, zoology or marine biology. Students with lower qualifications (minimum HND or equivalent) but substantial relevant work experience will also be considered for entry, subject to interview by the Programme Leader.

Candidates with existing achievements may be considered for exemption from specific modules under the University guidelines for accreditation of prior learning (APCL) and assessment of prior experiential learning (APEL). The Director of Postgraduate Programmes has responsibility for approving exemption under these guidelines. His/her decision will be made after consulting with the Programme Leader and Module Leaders.

Overseas students for whom English is not the first language will be expected to demonstrate proficiency in English with a minimum IELTS score of 6.5. Successful completion of the University's International Foundation Programme will be accepted as an equivalent.

- Provision will be made for disabled students by reasonable adjustments where safety and educational standards are not prejudiced.
- If a student has a particular disability which means that they are disadvantaged by specific assessment tasks, alternatives will be considered such as *viva voce* examinations.
- The Disability Assist Service offers the use of computers, readers, amanuenses and other support mechanisms which may be used where appropriate.

#### **10. Progression criteria for Final and Intermediate Awards**

Not applicable

#### **11. Exceptions to Regulations**

None

#### **12. Transitional Arrangements**

BIO506 replaced by MAR529\* as an optional module

\*MAR529 suspended for 2019/20

### 13. Mapping and Appendices:

#### 13.1. ILOs against Modules Mapping

| Programme Intended Learning Outcomes Map   | Masters (M) Level   |  |
|--|---|--|
| 1 Graduate Attributes and Skills   | 2   | 3  |
| Core Programme Intended Learning Outcomes  | Aim   | Related Modules  |
| <p>Knowledge/Understanding</p> <ol style="list-style-type: none"> <li>1. A sound framework of the concepts of sustainability applicable to biological systems</li> <li>2. A theoretical set of methodologies for evaluating sustainable resource use</li> <li>3. An understanding of the paradigms applied to concepts of sustainability</li> <li>4. An understanding of the breadth of the aquaculture industry and its resource demands</li> <li>5. An appreciation of the key drivers in maintaining profitability in commercial aquaculture and associated enterprises</li> <li>6. An understanding of the fundamental principles of growth, health and development of fish and other cultured species.</li> <li>7. An understanding of the importance of biotic and abiotic factors affecting aquaculture output</li> <li>8. A sound framework of research skills applicable to independent research</li> </ol> | <p>SA2</p> <p>SA2,<br/>SA3,<br/>SA5</p> <p>SA2</p> <p>SA1,<br/>SA2</p> <p>SA1</p> <p>SA1,<br/>SA2</p> <p>SA2,</p> <p>SA4,<br/>SA4,<br/>SA5,<br/>SA6,<br/>SA7,<br/>SA8</p> | <p>BIO5125,</p> <p>BIO5125,</p> <p>BIO5125,</p> <p>BIO504,<br/>BIO5125,<br/>BIO5209,<br/>MAR507</p> <p>BIO504,<br/>BIO5208,<br/>BIO5209,<br/>MAR507</p> <p>BIO504,<br/>MAR507,<br/>BIO5125</p> <p>BIO5125,<br/>MAR507</p> <p>BIO5131,<br/>BIO505</p> |

|  |   |  |
|--|---|--|
| <p>Cognitive/Intellectual Skills</p> <ol style="list-style-type: none"> <li>1. Analytical and critical skills in contrasting the role, power and practices of different sustainability learning communities and organizations</li> <li>2. Skills to critically assess current learning for sustainability practice and synthesise their own personal worldview</li> <li>3. The ability to refer to and analyse case studies</li> <li>4. Strategic proposals that incorporate environmental concerns into social, economic and political processes</li> <li>5. The ability to learn through direct experience</li> </ol>  | <p>SA3</p> <p>SA2,<br/>SA3,<br/>SA4</p> <p>SA4</p> <p>SA2,<br/>SA6</p> <p>SA5,<br/>SA7,<br/>SA8</p>           | <p>BIO5125,<br/>BIO5208,<br/>MAR507</p> <p>BIO504,<br/>BIO5208,<br/>BIOL5125<br/>BIO5208<br/>BIO5125</p> <p>BIO5208,<br/>BIO5125</p> <p>BIO5131,<br/>BIO5208,<br/>BIO505</p> |
| <p>Key/Transferable Skills</p> <ol style="list-style-type: none"> <li>1. Work effectively within a group as leader or member, make appropriate use of the capacities of group members and handle conflict sensitively and with confidence</li> <li>2. Write clearly argued, well-structured and correctly referenced material, with precisely matching referencing and bibliography</li> <li>3. Communicate in clear English, showing clarity of expression and fluency of presentation of ideas and insights</li> <li>4. Use a full range of learning resources and ICT</li> <li>5. Reflect on their own ideas by becoming more acquainted with unfamiliar initiatives and argument</li> <li>6. Live and work in a multi-disciplinary, multi-cultural environment</li> <li>7. Critically assess evidence for themselves through independent judgement</li> <li>8. Improve time management and develop self-discipline.</li> </ol> | <p>SA4</p> <p>SA4,<br/>SA6</p> <p>SA4</p> <p>SA4,<br/>SA5<br/>SA3</p> <p>SA6</p> <p>SA4,<br/>SA7,<br/>SA8</p> | <p>BIO5208</p> <p>BIO5125,<br/>BIO5131</p> <p>All</p> <p>All</p> <p>BIO5208,<br/>BIO505<br/>BIO505</p> <p>BIO5208,<br/>BIO505</p> <p>All, especially<br/>BIO505</p>          |

|   |  |   |
|---|--|---|
| <p>Practical Skills (subject specific)</p> <ol style="list-style-type: none"> <li>1. Prepare well-supported and critical (written and oral) analyses of theory and empirical evidence</li> <li>2. Formulate proposals aimed at dealing with the complexity of a range of issues and situations</li> <li>3. Formulate a conceptual framework and use a range of information sources in research</li> <li>4. Work in a multi-disciplinary team and relate to new cultural environments</li> <li>5. Elaborate and communicate proposals, evaluations and strategies</li> </ol> | <p>SA4,<br/>SA6</p> <p>SA7</p> <p>SA4,<br/>SA5,<br/>SA7</p> <p>SA4</p> <p>SA4,<br/>SA5,<br/>SA6,<br/>SA7</p> | <p>BIO5131,<br/>BIO504,<br/>BIO5208</p> <p>BIO5131,<br/>BIO505,<br/>BIO5208</p> <p>BIO5131,<br/>BIO505</p> <p>BIO5208</p> <p>BIO5131,<br/>BIO5208,<br/>BIO505</p> |
| <p>Employment-related skills</p> <ol style="list-style-type: none"> <li>1. Recognition of the range of employment opportunities in aquaculture</li> <li>2. Independent learning and decision making</li> <li>3. Critical appraisal of issues associated with the professional practice of aquaculture</li> <li>4. Identification of professional skills requirements and providers</li> <li>5. Specific practical skills appropriate to R and D in aquaculture.</li> </ol>  | <p>SA1</p> <p>SA3,<br/>SA4,<br/>SA8</p> <p>SA1,<br/>SA3,<br/>SA4</p> <p>SA8</p> <p>SA4,<br/>SA5,<br/>SA7</p> | <p>BIO5208</p> <p>BIO5208,<br/>BIO505</p> <p>BIO504,<br/>BIO5208</p> <p>BIO505</p> <p>BIO5208,<br/>BIO505</p>   |

### 13.2. Assessment against Modules Mapping (Core modules)

| <b>Module code</b> | <b>Scientific review</b> | <b>Scientific report/Dissertation</b> | <b>Management/Project Plan</b> | <b>Oral Presentation</b> |
|--------------------|--------------------------|---------------------------------------|--------------------------------|--------------------------|
| BIO504             |                          |                                       |                                |                          |
| BIO5208            |                          |                                       |                                |                          |
| BIO5125            |                          |                                       |                                |                          |
| BIO5131            |                          |                                       |                                |                          |
| BIO505             |                          |                                       |                                |                          |

### 13.2 Skills against Modules Mapping (Core Modules)

|  | <b>Analysis</b> | <b>Synthesis</b> | <b>Evaluation</b> | <b>Application</b> | <b>Group working</b> | <b>Learning resources</b> | <b>Self-evaluation</b> | <b>Management of information</b> | <b>Autonomy</b> | <b>Communications</b> | <b>Problem solving</b> |
|--|-----------------|------------------|-------------------|--------------------|----------------------|---------------------------|------------------------|----------------------------------|-----------------|-----------------------|------------------------|
| BIO504 Health and Production in Aquaculture                | *               | *                | *                 | *                  |                      | *                         |                        | *                                |                 | *                     |                        |
| BIO5208 Contemporary issues in Aquaculture                 | *               | *                | *                 | *                  | *                    | *                         |                        | *                                | *               | *                     | *                      |
| BIO5125 Sustainable Use of Resources in Biological Systems | *               | *                | *                 | *                  |                      | *                         |                        | *                                | *               | *                     |                        |
| BIO5131 Postgraduate research skills & methods             | *               | *                | *                 | *                  |                      | *                         |                        | *                                |                 | *                     | *                      |
| BIO505 Research project                                    | *               | *                | *                 | *                  |                      | *                         | *                      | *                                | *               | *                     | *                      |