University of Plymouth

Faculty of Science and Engineering

School of Biological and Marine Sciences

Programme Specification

MRes Applied Marine Science (AMS) [1907]

September 2016
1. **MRes Applied Marine Science**

   **Final award title:** Master of Research in Applied Marine Science (AMS) on completion of 180 credits

   **Intermediate award title(s):**
   - Post Graduate Certificate on completion of 60 credits
   - Post Graduate Diploma on completion of 120 credits

   **UCAS code** N/A
   **JACS code** F730

2. **Awarding Institution:** Plymouth University
   **Teaching institution(s):** Plymouth University

3. **Accrediting body:** Not accredited.

4. **Distinctive Features of the Programme and the Student Experience**
   The MRes Applied Marine Science programmes provide scientific knowledge of the marine environment and the pressures placed on it. They develop the skills required to assimilate knowledge over a wide range of disciplines and apply them to marine environmental assessment and management.

   This well-established programme is run in conjunction with Plymouth Marine Laboratory. The MRes has run successfully since 2000 (and the MSc since 1991). This programme welcomes applicants with either a background in marine science or with unrelated science or engineering degrees and are ideal for those wishing to pursue a career or research in marine science.

   The programme addresses important issues that have global environmental and societal impact. These include global warming, sea level rise, ocean acidification, the increased incidence of storms, coastal defence/flooding, pollution and the sustainable management of marine systems.

   This programme produces graduates with a scientific knowledge of the marine environment and an understanding of the pressures placed upon it. They develop the skills required to assimilate knowledge over many disciplines and apply it to environmental analyses. The programmes are highly regarded by the marine sector and employment opportunities are excellent. A few examples of graduate employment are summarised below:
On completion of the programmes, around one third of graduates choose to study for a PhD. A recent graduate (2014) is studying for a PhD at the School of Earth and Ocean Sciences in Cardiff looking at changes in ocean circulation patterns, sea level and ice volume during the greenhouse/icehouse transition. Another graduate from the same year is studying for a PhD at the University of Aberdeen on the ecology and physiology of deep-sea amphipods in the SW Pacific.

Graduates frequently occupy positions in marine research institutions like Plymouth Marine Laboratory. Examples include a graduate who is a marine instrumentation and data scientist for the Sir Alister Hardy Foundation for Ocean Science and another graduate who is a climate research scientist at the UK Meteorological Office Hadley Centre.

A graduate from 2014 has a career in the marine renewables sector working for Renewable Energy Systems as an assistant offshore developer in Hertfordshire.

Many graduates gain roles in local councils, one is a coastal engineer with Havant Borough Council, UK, and another worked in environmental planning at Plymouth Council and now works for Natural England.

Many graduates work for marine consultancies at home and overseas. Examples include: consultant modeller at Intertek, Wales; Director at Granted Consultancy Ltd, UK; senior analyst at JBA Consulting, UK. Overseas examples include: BMT JFA Consultants Pty Ltd in Perth, Western Australia; marine research scientist for MScience Pty Ltd, also in Western Australia; environmental monitoring and advice primarily to the oil and gas industry.

Some masters graduates work for marine charities and conservation groups such as Green Peace. One graduate worked for local NGO Surfers Against Sewage and now has a career with Natural England.

Graduate sometimes work as hydrographic surveyors, an example for DeepOcean subsea services in Norway.

The UK Environment Agency employs many of graduates including one who now works at a senior level as Environmental Performance Manager.

Dissertation topics are wide ranging, for example, studies of ocean acidification, rip current dynamics, the impact of contaminants in marine waters and the behaviour of bottlenose dolphins. In particular around half the projects each year are conducted with outside bodies such as Plymouth Marine Laboratory.

The programme has the following unique selling points:

- Plymouth has a long association with marine science, which is reflected in the many marine organisations based in the city such as the Marine Biological Association, the Plymouth Marine Laboratory and the National Marine Aquarium. The University has an MOU with Plymouth Marine Laboratory and close links with other marine organisations. Many of our students have taken advantage of this and carried out their dissertations in collaboration with these organisations. In addition, we have links to commercial consultancy companies; local councils and
environmental organisations, which have provided both, project ideas and supervision.

- About half the candidates each year undertake their research dissertation in association with an external organisation.
- There are various site visits to the local bays and estuaries, including a field week when students gain practical experience of working with complex instrumentation both in the laboratory and at sea.
- These are long-established, well-respected programmes with an excellent overall rating. For example, the MSc Applied Marine Science was previously awarded up to 6 (the maximum) NERC advanced course studentships, before NERC withdrew these studentships nationally.
- An extensive range of field/laboratory equipment, including the COaST laboratories, our research vessel RV Falcon Spirit and a new waterfront marine centre within walking distance.

5. Relevant QAA Subject Benchmark Group(s)
There is no Masters-level marine benchmark group, the closest subject area that has one being Chemistry:
http://www.qaa.ac.uk/ASSURINGSTANDARDSANDQUALITY/SUBJECT-GUIDANCE/Pages/Master's-degree-benchmark-statements.aspx

For the marine undergraduate programmes the relevant benchmark group is ‘Earth Sciences, Environmental Sciences and Environmental Studies’ and we interpret here with the SEEC level 7 descriptors (p14):

And the Masters’ descriptor of the QAA ‘Masters’ Degree Characteristics’ document (p16): http://www.ehea.info/Uploads/SubmitedFiles/5_2013/113542.pdf
6. Programme Structure
The MRes programme is 100% coursework assessed.

First semester: 3 x 20 credit modules (same as MSc route)
Second semester: 120 credit dissertation.

<table>
<thead>
<tr>
<th>TIMING</th>
<th>MODULES</th>
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<tbody>
<tr>
<td>Semester 1</td>
<td>MAR513 Research Skills &amp; Methods (15 weeks)</td>
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<tr>
<td></td>
<td>MAR514 Marine Science (12 Weeks)</td>
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<tr>
<td></td>
<td>MAR515 Management of Coastal Environments (12 Weeks)</td>
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<tr>
<td></td>
<td>Preparation for research project &amp; dissertation (3 Weeks)</td>
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<tr>
<td>Semester 2</td>
<td>MAR525 MRes Dissertation</td>
</tr>
<tr>
<td>Summer</td>
<td>Core 120 credits (All Year module)</td>
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<td></td>
<td>MRs 180 credits</td>
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The MRes route has been becoming increasingly popular in recent years, requires minimal additional resource and provides an opportunity for longer more in-depth research projects. This is an attractive course for research-focussed candidates and the timescales often better fits some externally supported projects.

Students apply for either the MSc or MRes route and further information on the distinction between these routes is provided at induction. The common semester 1 gives the opportunity for students to change route during first semester.

It is possible for students to transfer between MSc and MRes pathways prior to the end of Semester 1 with the agreement of the Programme Leader. Students wishing to transfer should endeavour to discuss this with their program manager at the earliest opportunity in the first semester. If the transfer between pathways is agreed by the Programme Leader, this will be notified to, and affected by the Faculty administrator. It should be noted that not all requests will be granted as some students may be deemed suitable for the MSc but unsuitable for an extensive period of self-directed research that is required by the MRes pathway.
7. **Programme Aims**
The overarching aim of this programme is to produce masters-level students with the knowledge and skills required to pursue a research or professional career in the marine science area.

Specifically, the programme is intended to:

**A1** Develop a comprehensive and detailed scientific knowledge and understanding of the marine environment, the pressures placed on it and the importance of sustainable management to society.

**A2** Provide an advanced knowledge of key contemporary issues in the marine science area.

**A3** Acquire an appreciation of the linkages between physical, biological, chemical and anthropogenic aspects of marine systems.

**A4** Develop a portfolio of generic and marine science specific skills required to assimilate and apply knowledge over a wide range of relevant disciplines.

**A5** Produce postgraduates with the knowledge and skills required to effectively monitor and manage the marine environment.

**A6** Further develop graduates ability to effectively plan, execute and conduct complex, high-level scientific experiments including the rigorous analysis of data to test concepts and hypotheses.

**A7** Produce marine scientists that are able to interpret complex information to a level that facilitates decisions related to managing the marine environment.

**A8** Develop skilled scientists that are capable of disseminating their work at the highest level.

**A9** Train collegiate workers capable of contributing to a team and leading marine research and consultancy within a professional environment.

**A10** Provide the opportunity to carry out an advanced MRes research project in the field of Applied Marine Science and so contribute to the growing knowledge base in this field.

8. **Programme Intended Learning Outcomes**

8.1. **Knowledge and understanding**
On successful completion of this course, graduates should have developed:

1. A systematic understanding of knowledge and a critical awareness of current problems and new insights at the limits of knowledge in marine science [A1, A2, A3]

2. A comprehensive understanding of the marine environment, the pressures placed on it and the importance of sustainable management to society [A1, A2, A3]

3. A comprehensive understanding of observation, measurement, and analysis techniques applicable to marine systems [A4, A5]

4. Demonstrate a practical understanding of how established techniques of research are used to create and interpret knowledge in marine science [A4, A5, A6]
8.2. Cognitive and intellectual skills
On successful completion, graduates should have developed a conceptual understanding that enables them to:
1. Critically evaluate current research and advanced scholarship in marine science [A1, A2, A3]
2. Evaluate methodologies and develop critiques of them [A4, A5, A6]
3. Propose new hypotheses [A6]
4. Demonstrate originality in their application of knowledge [A6]

8.3. Key and transferable skills
On successful completion graduates should have developed the ability to:
1. Deal with complex issues both systematically and creatively [A6]
2. Make sound judgements in the absence of complete data [A7]
3. Communicate their conclusions clearly to specialist and non-specialist audiences. [A8]

8.4. Employment related skills
On successful completion, graduates should have developed the qualities and transferable skills necessary for employment requiring:
1. The exercise of initiative and personal responsibility [A9]
2. Decision-making and management in complex and unpredictable situations [A5 A9]
3. The independent learning ability required for continuing professional development [A4]
4. The ability to continue to advance their knowledge and understanding, and to develop new skills to a high level within the marine science context [A4]

8.5. Practical skills
On successful completion graduates should have developed the:
2. Ability to act autonomously and in teams in planning and implementing tasks at a professional or equivalent level [A9]
3. Ability to independently use specialist marine software or equipment [A5]

9. Admissions Criteria, including APCL, APEL and DAS arrangements
These programme primarily (but not exclusively) aims to recruit science and engineering graduates, although applications will be considered from well-qualified graduates in other disciplines with relevant experience.

Application will be through the usual system for application to Masters degrees within the University. Candidates require an appropriate background in science or engineering to honours degree level (normally 2:1 or above) or equivalent. Candidates are required to submit transcripts of supporting documents such as a
first degree. Non UK qualifications may be crosschecked with universities and by consulting the ENIC –NARIC network. Relevant work experience may be taken into consideration. Candidates are also required to demonstrate their proficiency in English (e.g. GCSE, AS Level, A Level, IB, Cambridge Proficiency Certificate level 4-5, Oxford Higher Certificate, International Certificate Conference (ICC Stage 3 Technical), IELTS scores 6.5.

Candidates with MSci, MEng, MGeol etc that are classed as 4-year undergraduate degrees are suitable applicants as these degrees are not deemed equivalent, by the ELQ criteria, to 180-credit Masters level degrees.

Plymouth University is fully compliant with the National SENDA requirements for the accommodation of disabled students within its degree programmes. All applications will be assessed on academic criteria as described above. Once accepted the students will be put into contact with the Disability ASSIST Services who will liaise with the course leader to identify actions, which need to be taken. Where necessary alternatives to fieldwork will be provided.

The course has run since 2000 and has proven track record of recruiting from a truly international cohort of students.

10. Progression criteria for Final and Intermediate Awards
The MRes in Applied Marine Science award requires a minimum of 180 credits and is categorised into grades:

**MSc/MRes with Distinction:**
This award is achieved by a student gaining an overall average mark on the programme of study of 70% and above, and the mark for the dissertation/major project module is not less than 70%.

**MSc/MRes with Merit:**
This award is achieved by a student gaining an overall average mark on the programme of study of between 60% and 69.99%, and the mark for the dissertation/major project module is not less than 60%.

**MSc/MRes:**
This award is normally achieved by a student gaining an overall average mark between 50% and 59.99%.

To pass a module requires a student to achieve at least 40% in both the exam and coursework elements and at least 50% in the overall module mark, or 50% overall if a coursework only module.
Exit award titles:
Post Graduate Certificate on completion (≥50%) of 60 credits.
Post Graduate Diploma on successful completion (≥50%) of 120 credits.

11. Exceptions to Regulations
None

12. Transitional Arrangements
It will be possible for part time students or students who failed modules from the former MRes Applied Marine Science to complete their studies within the framework of the new scheme. In all cases the pending changes to the MRes Applied Marine Science scheme will be discussed with part time applicants and advice will be given by the programme leader on the selection of modules that will be compatible with the new scheme. If a student fails a 10 credit module they will need to take the full 20 credit replacement but will only be charged for 10 credits.

2014/15 modules and 2015/16 replacements

<table>
<thead>
<tr>
<th>2013/14 modules (10 credits)</th>
<th>2014/15 modules (20 credits)</th>
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<tbody>
<tr>
<td>IMS5101 Research Skills</td>
<td>MAR513 Research Skills &amp; Methods</td>
</tr>
<tr>
<td>EAR5101 Research Methods</td>
<td>MAR513 Research Skills &amp; Methods</td>
</tr>
<tr>
<td>GYL5103 Geol, Geophys and Phys Ocy</td>
<td>MAR514 Marine Science</td>
</tr>
<tr>
<td>ENV5103 Mar Chem &amp; Nearshore Ecol</td>
<td>MAR514 Marine Science</td>
</tr>
<tr>
<td>EAR5110 Integrated CZM</td>
<td>MAR515 Management of Coastal Environments</td>
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<tr>
<td>IMS5103 Marine Policy and Regulations</td>
<td>MAR515 Management of Coastal Environments</td>
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## 13. Mapping:

### 13.1 Programme Intended Learning Outcomes vs. Modules

<table>
<thead>
<tr>
<th>Modules</th>
<th>Aims</th>
<th>Semester 1</th>
<th>Semester 2 and Summer</th>
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<tr>
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### Knowledge and Understanding [sect. 8.1]

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<tr>
<td>A comprehensive understanding of observation, measurement, and analysis techniques applicable to marine systems A4, A5, A10</td>
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<td>Demonstrate a practical understanding of how established techniques of research are used to create and interpret knowledge in marine science A4, A5, A6, A10</td>
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### Cognitive and intellectual skills [sect. 8.2]

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<th>Aims</th>
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<tr>
<td>Evaluate critically current research and advanced scholarship in AMS; A1, A2, A3, A10</td>
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<td></td>
</tr>
<tr>
<td>Evaluate methodologies and develop critiques of them A4, A5, A6, A10</td>
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<tr>
<td>Propose new hypotheses A6, A10</td>
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<td>Demonstrate originality in their application of knowledge A6, A10</td>
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### 13.2 Assessment against Modules (100% Coursework)

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**Formative**

| Tutorials | A1, A2, A3 | |
| Use of specialist equipment or software | A4, A5 | |

**Summative**

| Data Analysis & Presentation (incl. written and oral) | A1, A2, A3, A7, A8, A10 | A1, A2, A3 | A1, A2, A3, A7, A8, A10 |
| Scientific Writing, Professional Reports & Dissertations | A1, A2, A3, A10 | A1, A2, A3 | A1, A2, A3, A10 |
| Planning & Research Proposals | A6, A10 | A6, A10 | |
| Group/team work | A9 | A9 | |
| Use of specialist equipment or software | A4, A5 | A4, A5 | |
### 13.3 Programme Intended Skills vs.

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#### Key and transferable skills [sect. 8.3]

- **Deal with complex issues both systematically and creatively**
  - A6, A10

- **Make sound judgements in the absence of complete data**
  - A7, A10

- **Communicate their conclusions clearly to specialist and non-specialist audiences**
  - A8, A10

#### Employment related skills [sect. 8.4]

- **Exercise of initiative and personal responsibility**
  - A9, A10

- **Decision-making and management in complex and unpredictable situations**
  - A5, A9

- **Independent learning ability required for continuing professional development**
  - A4, A10

- **Ability to continue to advance their knowledge and understanding, and to develop new skills to a high level within the AMS context**
  - A4, A10

#### Practical skills [sect. 8.5]

- **Capacity for self-direction and originality in tackling and solving problems**
  - A4, A5, A10

- **Ability to act autonomously and in teams in planning and implementing tasks at a professional or equivalent level**
  - A9, A10

- **Ability to independently use specialist software or equipment**
  - A5, A10