Programme Title: MSc Freshwater and Marine Ecology

Programme Specification

Awarding Body/Institution: Queen Mary, University of London
Teaching Institution: Queen Mary, University of London
Name of Final Award and Programme Title: Master of Science (MSc)
Name of Interim Award(s): Postgraduate certificate (PG Cert)
Duration of Study / Period of Registration: 12 months (FT), 24 months (PT)
QM Programme Code / UCAS Code(s): 
QAA Benchmark Group: Biosciences (but no subject benchmark is available at Masters level)
FHEQ Level of Award: Level 7
Programme Accredited by: N/A
Date Programme Specification Approved: 
Responsible School / Institute: School of Biological & Chemical Sciences

Schools which will also be involved in teaching part of the programme:
School of Biological & Chemical Sciences

Institution(s) other than Queen Mary that will provide some teaching for the programme:

Programme Outline

Overview

Threats to the ecosystem goods and services that aquatic resources provide (e.g., clean drinking water, sustainable fisheries) frequently appear in the media and on the agendas of governments. To maintain these goods and services requires a fundamental understanding of the biodiversity and ecosystem processes responsible, for without knowledge there can be no application or effective management. With aquatic ecosystems under threat from multiple stressors, we have designed a programme to equip you with the necessary interdisciplinary practical skills and theoretical understanding for direct employment or further research.

Why study with us?

- The programme is designed to balance the latest in ecological theory with practical application in both freshwater and marine systems
- Multiple field-courses (Cape Verde, Dorset, Cumbria, Borneo) for practical ‘hands-on’ training. Note, we reserve the rights to change field sites given unpredictable circumstances.
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- The course is taught by expert staff with world class research profiles from the School of Biological and Chemical Sciences, the School of Geography, and from external organisations.
- Excellent research supervision undertaken either alongside established PhD students or with potential employer organisations.
- Access to ‘state of the art’ analytical facilities within The Centre for the Aquatic and Terrestrial Environment, developed from an initial investment by SRIF of £3 million.
- Access to the Freshwater Biological Association’s River Laboratory on the River Frome in Dorset via our River Communities Group, and to mesocosm and temperature controlled facilities at QMUL.

Aims of the Programme

The overarching aim of the programme is to provide a thorough grounding in cutting-edge research in Freshwater and Marine Ecology during a period of unprecedented environmental change. Students will learn about research by practical application, rather than learning about the research process via formal teaching.

Half of the credit rating of the programme is acquired from a combination of five compulsory taught modules of contemporary science, including residential field courses to place the accrued knowledge in context, and one further optional module from a choice of three exciting field course locations around the world. The remaining half of the programme is given over to a substantive research project, and the complete programme leads to the MSc qualification. Thus, it should provide a comprehensive preparation for students wishing to progress onto a research degree or into employment in a research-oriented environment.

The programme aims to:

• enable candidates to develop a portfolio of experimental skills and practical techniques, and thereby provide them with the confidence to tackle more extended research studies (e.g. PhD);
• provide a sound knowledge base in the fields studied and develop key transferable skills in the areas of communication, numeracy, information technology, working with others, problem solving, time and task management;
• foster the development of an enquiring, open-minded and creative attitude, tempered with scientific discipline and social awareness, which encourages lifelong learning.

What Will You Be Expected to Achieve?

In summary, the application of good scientific principles in addition to independent and innovative thought. You will be expected to achieve an advanced, inter-disciplinary understanding of techniques and methodologies applicable to the fields of freshwater and marine ecology, and an appreciation of the current research issues which are driving the science forward.

In particular, you should be able to demonstrate:

• the ability to synthesise information with critical awareness in a manner that may be innovative, utilising existing knowledge or cutting-edge, contemporary processes from the forefront of the discipline
• a level of conceptual understanding that will allow you critically to evaluate aquatic ecological research, advanced scholarship and methodologies, and to argue alternative approaches
• initiative and originality in problem solving, and be able to act autonomously in planning and implementing tasks at a professional or equivalent level

From a practical training perspective, you will:

• acquire technical expertise, and be able to perform tasks smoothly with precision and effectiveness;
• be able to adapt skills and design or develop new skills and/or techniques, for new applications that engage with user needs.

Students taking the Postgraduate Certificate will achieve a substantial subset of the above skills through completion of four of
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the five compulsory modules, but will not complete an independent research project and will thus not have the experience of combining all of the above to produce a thesis.

Academic Content:

<table>
<thead>
<tr>
<th>A1</th>
<th>critically evaluate aquatic ecological theory</th>
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<tbody>
<tr>
<td>A2</td>
<td>comprehend cutting edge technologies and how these contribute to the development of the field</td>
</tr>
<tr>
<td>A3</td>
<td>adapt understanding to novel settings</td>
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<tr>
<td>A4</td>
<td>use quantitative data competently and confidently</td>
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</table>

Disciplinary Skills - able to:

<table>
<thead>
<tr>
<th>B1</th>
<th>critically assess and evaluate methodology and experimental design</th>
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<tbody>
<tr>
<td>B2</td>
<td>rigorously apply field survey and laboratory analytical skills</td>
</tr>
<tr>
<td>B3</td>
<td>robustly and critically interpret statistics applied to large and complex datasets</td>
</tr>
<tr>
<td>B4</td>
<td>evaluate the process by which science informs policy and management</td>
</tr>
<tr>
<td>B5</td>
<td>assess the issues governing good practice in both the laboratory and the field</td>
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</table>

Attributes:

<table>
<thead>
<tr>
<th>C1</th>
<th>to operate and conduct oneself in complex and unpredictable and/or specialized contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>to exercise initiative and personal responsibility in professional practice</td>
</tr>
<tr>
<td>C3</td>
<td>acquire a range of personal and professional transferable skills in project design and management, team-working, report writing, communication and presentation skills and IT skills</td>
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How Will You Learn?

The modules making up the programme will be taught in blocks of two weeks with a subsequent week long study break to use for independent learning and fulfilling the requirements of continuous assessment exercises. Most modules comprise lectures during the morning of each day and then the afternoons are dedicated to seminars, breakout discussion groups, workshops, and laboratory or computer-based practicals. Much of the theory gleaned from formal teaching during the modules will be placed in ‘real-world’ context on the residential field courses, which will comprise site visits, presentations from practitioners and stakeholders, and practicing field skills.

Practical skills will be learned from activities associated with field trips (day-long) and in more-extensive laboratory sessions, associated with most modules. This training in practical skills will build towards the completion of a substantive research project.
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which should coalesce theoretical, practical and transferable skills.

As an example, the Science into Policy & Management module comprises a week long residential field course based at the River Communities Group, Dorset and will be taught as a detailed case study via lectures, workshops, site visits, method developments, policy discussion groups and seminars.

How Will You Be Assessed?

Each module will be assessed by a range of continuous assessment methods only for two main reasons.

We have already demonstrated that this approach is ample to fairly reflect the abilities of students undertaking the FACS, AER & IMFE MSc programmes run by SBCS and Geography; in addition, as there will be some shared modules with the latter two programmes as well as Ecology & Evolutionary Biology MSc run by SBCS so it is essential to maintain consistency.

We also want to encourage further potential students to undertake the programme for the Certificate award, perhaps those that are fully employed by a Consultancy or body such as the Environment Agency, that wish to accrue higher qualifications but cannot afford to take time out for a full MSc, or indeed may be sponsored by their employer to do so. Our block taught modules with assessment inclusive are attractive to such students; we have had several students undertake the FACS MSc programme like this over the years. It also maintains flexibility and benefits students taking the whole MSc PT to have the assessment continuously aligned to the modules rather than having a block of exams at the end of each academic year or semester.

Assessments are varied but the majority are based upon scientific report writing: for example, the Ecosystem structure & function module assessment comprises a report and a presentation. The written report is derived from a day of fieldwork and a day of labwork during which an ecosystem is characterised using various indices and population estimates. Students work in groups to compile physical, chemical and biological data, and that collated dataset is then checked by the assessors. Four questions are used to structure the report which requires the students to draw upon their field experience and data collation, as well as more theoretical knowledge from the lectures and workshops. The presentation is typically a review of a recent high profile paper in a topical subject such as invasion ecology and the student is assessed on critical analysis of the content, understanding, as well as general presentation skills. The grades are weighted 80:20 for the report and presentation. Thus, in this example, assessment of knowledge, understanding, and skills are tested.

Statistical interpretation is assessed by a series of MCQs and a written report, and project / study design and implementation are assessed by the thesis which should be written in the style of a scientific paper.

Each module is taught within a two week block and typically followed by a ‘fallow’ week in the timetable allowing for assessments to be completed and feedback to be received before the next assessment is undertaken.

How is the Programme Structured?

The programme is structured to allow logical progression through the modules: -

A general introduction to the physical aspects of aquatic ecosystems, followed by more biological & chemical aspects;
A contemporary statistical training directed towards large datasets, and a module specifically about surveying and sampling design and application;
Field training in via numerous residential field courses covering different environments;
Converting science into policy & management

The MSc culminates in a piece of independent and novel research that should draw upon many of the aspects taught and the skills experienced throughout the previous six months.
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Academic Year of Study: 1

<table>
<thead>
<tr>
<th>Module Title</th>
<th>Module Code</th>
<th>Credits</th>
<th>Level</th>
<th>Module Selection Status</th>
<th>Academic Year of Study</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecosystem Structure &amp; Functioning</td>
<td>BIO737P</td>
<td>15</td>
<td>7</td>
<td>Compulsory</td>
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<td>Semester 1</td>
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<tr>
<td>Statistics &amp; Bioinformatics</td>
<td>BIO781P</td>
<td>15</td>
<td>7</td>
<td>Compulsory</td>
<td>1</td>
<td>Semester 1</td>
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<tr>
<td>Science into Policy &amp; Management</td>
<td>BIO739P</td>
<td>15</td>
<td>7</td>
<td>Compulsory</td>
<td>1</td>
<td>Semester 1</td>
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<tr>
<td>Quantitative Techniques for Surveying and Monitoring in Ecology</td>
<td>BIO795P</td>
<td>15</td>
<td>7</td>
<td>Compulsory</td>
<td>1</td>
<td>Semester 1</td>
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<tr>
<td>Ecological Theory and Applications</td>
<td>BIO735P</td>
<td>15</td>
<td>7</td>
<td>Compulsory</td>
<td>1</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Ecology &amp; Evolutionary Biology Field Course</td>
<td>BIO792P</td>
<td>15</td>
<td>7</td>
<td>Elective</td>
<td>1</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Marine Mammals &amp; Turtles</td>
<td>BIO794P</td>
<td>15</td>
<td>7</td>
<td>Elective</td>
<td>1</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Ecology &amp; Evolutionary Biology Research Project</td>
<td>BIO703P</td>
<td>90</td>
<td>7</td>
<td>Compulsory</td>
<td>1</td>
<td>Semester 2 &amp; 3</td>
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What Are the Entry Requirements?

All students will be admitted via SBCS

For the MSc programme, a second class honours degree in a relevant subject such as Biology, Ecology, Zoology, Genetics, Environmental Science, or Environmental Geography will be required. Preference will be given to candidates with an upper second class or first class degree. Applicants with relevant professional experience in ecological or environmental management will also be considered.

Individuals registering for and passing the Postgraduate Certificate will be considered for transfer to the MSc.

How Do We Listen and Act on Your Feedback?

The Student-Staff Liaison Committee (SSLC) provides a formal means of communication and discussion between the School and its students. The committee consists of student representatives from each programme and each year in the school, together with appropriate representation from staff within the school. It is designed to respond to the needs of students, as well as act as a forum for discussing programme and module developments. The Student-Staff Liaison Committee meet regularly throughout the year.

The School operates a Teaching and Learning Committee, chaired by the School's Director of Taught Programmes, which oversees and advises on all matters relating to the delivery of taught programmes at school level. This includes monitoring the application of relevant QM policies and reviewing all proposals for module and programme approval and amendment, before submission to Taught Programmes Board. Student views are incorporated in this Committee’s work in a number of ways, such as through consideration of items referred by the SSLC and by consideration of student surveys, including module evaluation questionnaires.
All schools operate an Annual Programme Review of their taught undergraduate and postgraduate provision. Students’ views are considered in this process through analysis of the results from the National Student Survey (NSS), module evaluations and other internal Queen Mary surveys.

**Academic Support**

The School runs a substantive induction programme specifically for its MSc intake each year. Module organisers are the first point of academic contact for advice and support during the taught component. Project supervisors are allocated once project topics have been decided upon. The Programme Director acts as the coordinator of all programme activities, supported by staff of the SBCS Administrative Office. If there is requirement for further advice or support, then one of the School’s Senior Academic Advisors or the Director of Taught Programmes may be consulted.

**Programme-specific Rules and Facts**

Students wishing to be awarded the PG Certificate in Freshwater and Marine Ecology must complete four of the five compulsory modules listed.

**Specific Support for Disabled Students**

Queen Mary has a central Disability and Dyslexia Service (DDS) that offers support for all students with disabilities, specific learning difficulties and mental health issues. The DDS supports all Queen Mary students: full-time, part-time, undergraduate, postgraduate, UK and international at all campuses and all sites.

Students can access advice, guidance and support in the following areas:
- Finding out if you have a specific learning difficulty like dyslexia
- Applying for funding through the Disabled Students’ Allowance (DSA)
- Arranging DSA assessments of need
- Special arrangements in examinations
- Accessing loaned equipment (e.g. digital recorders)
- Specialist one-to-one “study skills” tuition
- Ensuring access to course materials in alternative formats (e.g. Braille)
- Providing educational support workers (e.g. note-takers, readers, library assistants)
- Mentoring support for students with mental health issues and conditions on the autistic spectrum.

**Links With Employers, Placement Opportunities and Transferable Skills**

Throughout each module (except for the Statistics & Bioinformatics module) there is opportunity for the students to engage with potential employers and enhance their employability. This is achieved in a number of ways: by including guest lecturers from
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partner institutions such as the Environment Agency, the Centre for Ecology & Hydrology, Natural England, or the Wild Trout Trust; by engaging in workshop discussions with invited speakers from industry; by encouraging uptake of projects with either of the above; and by active networking opportunities at the various society meetings around London - for example, The Linnean Society, The Institute of Fisheries Management, Thames21, or the Centre for Ecology & Evolution at IoZ.

<table>
<thead>
<tr>
<th>Programme Specification Approval</th>
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<tbody>
<tr>
<td>Person completing Programme Specification</td>
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<td>Person responsible for management of programme</td>
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<tr>
<td>Date Programme Specification produced/amended</td>
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<tr>
<td>by School Learning and Teaching Committee</td>
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<tr>
<td>Date Programme Specification approved by</td>
</tr>
<tr>
<td>Taught Programmes Board</td>
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