Programme Title: MSc Ecology & Evolutionary Biology

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)
C1S8

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

The programme will focus on concepts and theory essential to understanding global ecological change, including: state-of-the-art techniques for environmental process research, invasive species ecology, and conservation genetics. Students will also learn how to convert science to policy or management, and how to consult with stakeholders. Students will spend time shadowing our multidisciplinary research teams before conducting a substantive six-month project. These projects may be jointly supervised by colleagues at related institutes or within industry. We will equip science graduates with the essential skills to proceed to further research via PhD or careers in consultancy and industry.

Why study with us?

• With stakeholder engagement, we have developed modules accommodating pure research and applied practical skills developed to promote graduate employability.
• Two dedicated field courses: one in Africa to gain firsthand experience of theory in action; and one in Dorset, learning to convert science to policy with our River Communities Group
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- Opportunities for projects in the UK and overseas, and in conjunction with collaborators at institutions such as the Institute of Zoology, Royal Botanic Gardens Kew, NERC Centre for Ecology and Hydrology, and the Natural History Museum.
- You will be taught by internationally recognised scientists who are leaders in their respective fields.
- You can attend scientific events and seminar series across London.

Aims of the Programme

The overarching aim of the programme is to provide a thorough grounding in cutting-edge research in Ecology and Evolutionary Biology 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 four taught modules of contemporary science, an extended and dedicated African field course to place the accrued knowledge in context, and one further module placing science in the context of policy and management, to give a more applied flavour. 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 ecology and evolutionary biology, 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 ecological and evolutionary 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 the four compulsory modules, but will not complete an independent research project and will thus not have the experience of
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combining all of the above to produce a thesis.

Academic Content:

A1  critically evaluate ecological and evolutionary theory
A2  comprehend cutting edge technologies and how these contribute to the development of the field
A3  adapt understanding to novel settings
A4  use quantitative data competently and confidently

Disciplinary Skills - able to:

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

Attributes:

C1  to operate and conduct oneself in complex and unpredictable and/or specialized contexts
C2  to exercise initiative and personal responsibility in professional practice
C3  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

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 in Semester A will be placed in 'real' context on the residential field course in Africa, which will comprise site visits, management & conservation presentations from practitioners and stakeholders.

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 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 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 Ecology and Evolutionary Biology;
More specific topics at the cutting edge of research;
A contemporary statistical training directed towards large datasets;
Field training in Africa;
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>
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<tbody>
<tr>
<td>Ecological Theory and Applications</td>
<td>SBSM029</td>
<td>15</td>
<td>7</td>
<td>Compulsory</td>
<td>1</td>
<td>Semester 1</td>
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<td>Ecosystem Structure &amp; Functioning</td>
<td>SBSM004</td>
<td>15</td>
<td>7</td>
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<td>Semester 1</td>
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<tr>
<td>Statistics &amp; Bioinformatics</td>
<td>SBSM032</td>
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<td>Semester 1</td>
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<td>Research Frontiers in Evolutionary Biology</td>
<td>SBSM028</td>
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<td>7</td>
<td>Compulsory</td>
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<td>Semester 1</td>
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<td>Ecology &amp; Evolutionary Biology Field Course</td>
<td>SBSM030</td>
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<td>7</td>
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<td>1</td>
<td>Semester 2 &amp; 3</td>
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<td>Science into Policy &amp; Management</td>
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<td>7</td>
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<td>Semester 2</td>
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<tr>
<td>Ecology &amp; Evolutionary Biology Research Project</td>
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<td>90</td>
<td>7</td>
<td>Compulsory</td>
<td>1</td>
<td>Semester 2 &amp; 3</td>
</tr>
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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.

This programme involves a compulsory overseas field course, held in Africa. Applicants for the programme from outside the UK should ensure that there are no residency or travel restrictions that would prevent them from attending this course.

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.
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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 Ecology & Evolutionary Biology must complete the four modules listed as taking place in Semester 1.

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.

This programme involves an integral field-course during which students should expect to have to undertake physically-demanding work in remote locations. Applicants with any disability that impacts upon their ability to undertake such activities should seek advice from the School before applying for this programme.
**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 partner institutions such as the Institute of Zoology (IoZ), the Natural History Museum or the Royal Botanic Gardens; 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.

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**Programme Specification Approval**

| Person completing Programme Specification | Dr Jonathan Grey |
| Person responsible for management of programme | Dr Jonathan Grey |
| Date Programme Specification produced/amended by School Learning and Teaching Committee | 11 Dec 2012 |
| Date Programme Specification approved by Taught Programmes Board |