

PROGRAMME SPECIFICATION

1	Awarding Institution	Newcastle University
2	Teaching Institution	Newcastle University
3	Final Award	BSc Hons
4	Programme Title	Marine Biology Marine Biology with Placement Year Marine Biology (Inversion) Marine Biology with International Study Year
5	UCAS/Programme Code	C161 1157U 1738U 1841U
6	Programme Accreditation	IMarEST
7	QAA Subject Benchmark(s)	Organismal Biology Biosciences
8	FHEQ Level	6
9	Last updated	May 2023

10 Programme Aims

1. To enable everyone on the degree programme to develop a thorough knowledge and understanding of Marine Biology across the discipline and in the specialist areas of; (i) the biology of marine organisms; (ii) the ecology of marine communities and (iii) the physical and chemical processes occurring in the marine environment, together with appropriate research, practical and employability skills.

2. To be able to appreciate the application of this knowledge and understanding to the management of human activities.

3. To provide a Marine Biology programme for well-motivated people from a diversity of social, geographic and academic backgrounds.

4. To provide a Marine Biology curriculum enhanced by an active research environment that will encourage: thinking in a critical and constructive manner, awareness of new technologies and the skills and aptitudes needed for the development of a wide variety of careers within Marine Biology and other areas of graduate employment.

5. To stimulate an informed interest in Marine Biology and engender an awareness of the discipline's interaction with society and the environment.

6. To provide an environment within which everyone can enjoy their learning experience and develop the skills and attitudes to underpin lifelong learning.

For students on the Careers Placement Year programme:

7. Provide students with the experience of seeking and securing a position with an employer.

8. Facilitate independent self-management and proactive interaction in a non-university setting.

9. Provide a period of practical work experience that will benefit current academic study and longer term career plans.

10. Enable students to ethically apply their knowledge and skills in the work place, reflect upon their development and effectively evidence and articulate their learning in relevant future settings.

For students on the International Study Year Programme:

11. Offer students the opportunity to develop graduate attributes which increase employability, particularly communication and (where applicable) language skills, intercultural competencies, adaptability, resilience and global awareness.

12. Gain insight into international Higher Education and experience differences in academic approach and learning environment.

13. Provide the opportunity to experience new areas of study outside of their usual programme of study at Newcastle University.

11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have references to the benchmark statements for Marine Biology.

Knowledge and Understanding

On completing the programme students should have, and be able to, demonstrate:

A1 a coherent understanding of Marine Biology, including a knowledge and understanding of

- (i) the biology of marine organisms,
- (ii) the ecology of marine communities,
- (iii) the application of marine biological knowledge to applied industrial/technological scenarios and
- (iv) the physical and chemical processes occurring in the marine environment.

A2 a coherent understanding of the impact of human activities on the marine environment

A3 a coherent understanding of the role of interdisciplinary marine science in the management and conservation of the marine environment.

A4 an understanding of current developments in Marine Biology and appreciate the possible implications

A5 a coherent understanding of the process of data collection and analysis; sourcing scientific literature and producing an analytical review of new information from a range of sources

A6 an understanding of cellular biochemical processes and how they relate to organismal life-history and molecular differentiation

For students on the Careers Placement Year programme:

A7 Apply personal and professional development strategies to prioritise, plan, and manage their own skills development and learning.

A8 Research, select and apply relevant knowledge aimed at enhancing their own skills and effectiveness in specific duties at their placement.

A9 Demonstrate an understanding of a work environment, how it functions and their contribution to it.

A10 Relate their work based learning to other areas of personal development, including academic performance.

For students on the International Study Year Programme:

A11 Demonstrate the ability to adapt to different learning environments.

Teaching and Learning Methods

Knowledge and understanding (A1 – A4; A6) are principally imparted through lectures and seminars. Seminars and advanced lecture courses in Stage 3 are particularly important in delivering A4 as they provide the opportunity for exposure to knowledge at the 'cutting edge' of advancement in the field. Throughout the course students are directed to appropriate reading materials. The tutorial system and study skills classes provide support and guidance in the use of literature and the diversity of sources available. A number of 'self-study' packs, backed by tutorial support and seminars, are used to develop IT and statistical expertise (A5).

Assessment Strategy

Knowledge and understanding of the subject are primarily assessed through unseen written examinations to examine the breadth of factual knowledge. Assessed written tasks, essays and library projects are used to determine the ability to apply knowledge and integrate material. Formative feedback is provided throughout the course to allow students to assess and develop their learning skills.

Intellectual Skills

On completing the programme students should have developed skills in:

B1 Sourcing, abstraction and synthesis of information from a range of media

B2 Demonstrating academic rigour and the ability to propose, test and challenge hypotheses

B3 Experimental design

B4 Critical analysis and interpretation of data and text

B5 Solving problems and making reasoned decisions

Teaching and Learning Methods

Cognitive skills are introduced at Stage 1 (B1) and developed progressively throughout Stage 2 (B3-B5) to an advanced level in Stage 3 modules (B2). Group practical work and projects allow students to develop analytical skills supplemented by experimental design and data collection through practical classes, fieldwork and boat work. The Stage 3 research project and overseas field course promote development of hypothesis testing and problem solving skills (B1-B5).

Assessment Strategy

Academic rigour and hypothesis development and testing are primarily assessed through coursework assessments associated with field, boat and laboratory practical exercises, the overseas field course and ultimately the honours research project. Assessments range from written reports, short 'journal-style' articles, posters and computer based exercises. These

determine ability to conduct research based exercises integrating knowledge and practical abilities. Experimental design, hypothesis testing and data analysis skills are further assessed through an unseen, open book written examination. Formative feedback is provided throughout the course to allow students to assess and develop their learning skills.

Practical Skills

On completing the programme students should be able to:

- C1 Plan, design and execute effective laboratory experiments and field and boat work, including risk assessment
- C2 Conduct research both individually and as part of a small group
- C3 Employ a variety of laboratory techniques for Marine Sciences and Biology (e.g. microscopy, dissection, water chemical analysis; molecular analysis)
- C4 Collect and analyse field, ecological and boat-based organismal and oceanographic data
- C5 Employ computer-based techniques for analysis of relevant scientific data

Teaching and Learning Methods

Practical, field and research skills are developed in laboratory and field classes. Students are encouraged to develop and hone their practical skills through tutorial support and supervisor contacts in practical classes and project work. Independent and group project based exercises further reinforce these lessons and allow self-evaluation and critique (C1-C5).

Assessment Strategy

Assessment is primarily based on coursework in the form of written reports, targeted worksheets, computer based exercises and formative assessment and feedback in the laboratory/field/boat.

Transferable/Key Skills

On completing the programme students should be able to demonstrate:

- D1 Written communication in technical and popular science
- D2 Oral and poster presentation skills
- D3 Team work and interpersonal communication
- D4 Computer literacy
- D5 Numeracy and statistical expertise
- D6 Planning, organisation and independent learning
- D7 Awareness of their responsibility to society and the environment, including their potential influence in society
- D8 That they are motivated people, able to build on the learning experiences of the degree programme and the range of learning experiences and initial qualifications they had on entry
- D9 That they are capable of obtaining and developing careers in a wide range of work environments

For students on the Careers Placement Year programme:

D10 Reflect on and manage own learning and development within the workplace.

D11 Use existing and new knowledge to enhance personal performance in a workplace environment, evaluate the impact and communicate this process.

D12 Use graduate skills in a professional manner in a workplace environment, evaluate the impact and communicate the personal development that has taken place.

For students on the International Study Year Programme:

D13 Adapt and operate in a different cultural environment.

Teaching and Learning Methods

Key skills (D1 – D6) are taught formally at Stage 1 and developed further at Stage 2. Skills D7 to D9 are developed through participation in a work placement at Stage 2, which allows students to become more independent and work alongside organisations in the marine sector. All skills (D1 – D9) are reinforced to an advanced level at Stage 3 through exposure to practitioners and case studies in seminars and from visiting lecturers. These are an integral part of the advanced modules. Students take part in a variety of problem solving activities, including design of projects, role play exercises and planning overseas travel.

Assessment Strategy

Key skills are assessed by a combination of examination and coursework assignments, including project and practical reports, a reflective log of their work placement, essays, oral and poster presentations and computer-based assessments.

12 Programme Curriculum, Structure and Features

Basic structure of the programme

- (a) Duration three years.
- (b) Comprises three stages.
- (c) A total of 360 credits, 120 Stage 1, 120 Stage 2, 120 Stage 3
- (d) Module credit values vary between 20 and 40. 20 credits represents 200 hours of student activity and 40 credits 400 hours of student activity.
- (e) Progression: Pass in 120 credits is required in Stages 1 and 2. Modules which are failed with a mark of >35 can be compensated if the overall mark is >40. The Board of Examiners may recommend a pass at a lower mark if circumstances warrant.
- (f) Innovative features of the degree include the amount and integration of field studies into the programme, the vocational work placement, the Marine Biology overseas field course and the use of external practitioners and case studies to inform Stage 3 teaching. Students undertake two weeks of residential field courses, one week of local field work and three other modules include practical laboratory, field and research vessel classes.

Stage 1

Stage 1 provides an introduction to core subjects in Marine Biology supported by a balanced programme of modules designed to provide the sound scientific background required for the later stages of the degree programme.

Five compulsory modules cover the wide variety of ways scientist's measure and record the marine environment and how that information is used. All candidates for the Honours degree in Marine Biology must demonstrate a high level of proficiency and knowledge of these subjects.

The five compulsory modules at Stage 1 introduce the student to key areas of the syllabus and provide an introduction to practical study through the use of field and laboratory

classes and work on-board the research vessel. Independent field study with appropriate study guides, video and other methods of learning will also be used to provide the candidate with a rich and diverse background to their learning of Marine Biology and to ensure that the student has developed the skills required. The courses provide both an overview and an introduction to the subject and the modules are suitable for those proceeding to other scientific disciplines.

One elective optional module will allow students to either continue with the study or the marine environment, within the context of marine microbial and algal systems, or to pursue the study of molecular biological and genetic techniques.

At Stage 1 students will begin to learn how to supplement the formal taught components of the course with private study and Marine Biology candidates will be assigned Personal Tutors. Tutors will guide Students in the process as well as providing a small group study environment where the student will be encouraged to practise both study and communication skills prior to proceeding to those modules at Stages 2 and 3 where these skills will be formally assessed.

On completing the Stage 1 programme the student:

- Will be eager to learn more about Marine Biology
- Should have a sound knowledge of Marine Biology at an introductory level
- Will understand the basis for the study of Marine Biology through both biological and physical sciences

Stage 2

On completion of Stage 1 every student, whatever their cultural or academic background, will have achieved an enhanced basis for more advanced study of the subject at Stage 2 of the Honours Marine Biology programme which builds on the platform created by the first year of study. A number of compulsory subjects are studied at greater depth and new subjects in Marine Biology are introduced. The modules include both pure and applied aspects of Marine Biology as well as a continuation of basic scientific and information skill related modules. All students will again take five 20 credit compulsory modules. In addition, students will select one optional 20 credit module. These build directly on learning during Stage 1 and introduce additional concepts that will lead into more advanced modules to be studied in Stage 3 of the degree programme.

Special features of the course are modules providing more detailed coverage of experimental biology, marine ecology, oceanography, experimental and applied marine biology that lead into the advanced modules to be studied in Stage 3 of the degree programme.

Considerable emphasis is given to the learning of field and laboratory practical techniques and employability skills in the compulsory modules. These modules include laboratory and field study, data analysis, statistics and other numerical methods, alongside a vocational work placement with a provider in the marine sector. Students will be given training in sea survival techniques and safety issues and will undertake small group scientific investigations on a field course that has traditionally been held on the Isle of Cumbrae to provide them with experience of more diverse marine environments.

There are modules encouraging learning of the theoretical basis of Marine Biology for which the student will have to study a variety of sources of information. The candidate will also study modules which will enhance related practical skills. These modular elements are designed to develop the student's skills in information technology, data and information source handling, writing and oral presentation. All of which it is hoped that the candidates will enjoy using in Stage 3 of the programme and will enable them to proceed to a wide variety of career tracks.

At the end of the Stage 2 of the degree programme the student:

- will have gained a sound knowledge of the biology of marine organisms, the physical and chemical processes in the marine environment,
- should have knowledge of experimental study of the biology and regulatory processes of marine organisms and how this can be applied to address issues such as conservation, marine natural products and biofouling
- be able to locate and review literature using both library based and electronic information retrieval systems,
- will have developed a variety of practical and field skills appropriate for a Marine Biologist,
- will be in a position to plan and carry out an independent scientific investigation using either field or laboratory techniques,
- should be capable of independent study including the ability to present a review of their own work or that of others in relation to published sources of literature,
- will be able to recognise their transferable skills and apply them to a range of situations,
- will be aware of career opportunities within the marine sector and have the skills required to be an employable graduate

Building on these skills will be a major part of the programme of study at Stage 3.

Stage 3

Stage 3 of the degree programme has been designed to provide both broad coverage of the subject and to provide opportunities for specialisation and study in depth. The whole programme builds on the diverse learning outcomes achieved in the previous two Stages of the degree programme.

All students will take three compulsory 20 credit module and select one further optional 20 credit module. The 20 credit Advanced modules present a subject in the context of the current research literature and are led by active researchers in the field.. The student will complete two Advanced modules and will select to study three specific research topics within each of these modules. Such courses are inevitably specialised and deliberately reflect the research expertise of the School. The Advanced Research Skills module at Stage 3 will incorporate a small group approach and involve further practical work on-board the research vessel. At this Stage the student will be trained in procedures for study on a research vessel and associated safety measures. Numerical skills may lead into module components involving mathematical modelling and computer simulation in the analysis of marine biological and oceanographical problems. One further aspect of this skills module is the residential overseas field course. This will allow the student the opportunity to further develop their practical field skills, and transfer knowledge gained about the local marine environment to overseas ecosystems. The student will undertake a small group research project that is designed and conducted during the trip and will write this up as an individual report upon their return. This will further prepare them for collaboration and advanced scientific research.

This broad range of advanced course modules forms the background to the student's own independent studies.

A major component of the course that integrates much of the proceeding training is the **RESEARCH PROJECT** (40 credits).

The main component of the Research Project is an independent scientific investigation that will either be carried out solely in Newcastle under the supervision of an academic within the School, or outside of Newcastle, usually overseas, in partnership with an external organisation or institution. In this instance the student will have an academic supervisor in Newcastle and an external supervisor from their host organisation. Students will present the outputs of their research to the class, stage 2 students and the academic members of the School. The oral component will be assisted by the student having already gained experience at earlier stages of the degree programme and can expect to have achieved a

<p>high level of technical and professional competence by this stage of the degree programme.</p> <p>To further complement their development as research scientists, students will attend seminars delivered by external presenters across the marine sector. These will present conceptual ideas and provide the basis for in-depth independent study and will often involve interaction with Marine Scientists invited to participate in the programme.</p> <p>Students on the Careers Placement Year programme will take their placement in the penultimate year of studies. (Students on the Inversion course will take their placement after their final year of studies).</p>
<p>Key features of the programme (including what makes the programme distinctive)</p> <p>This programme integrates key aspects of the study of Marine Biology, by providing students with the opportunity to study marine ecology, marine chemistry, global physical processes, organismal biology, microbiology and biotechnology, fisheries biology and aquaculture, marine management and conservation. Students will have gained vocational employability skills that are embedded within their programme and there is a strong emphasis on developing practical skills in the laboratory, field and on-board the research vessel. Students are encouraged from the first Stage of their degree programme to become independent learners and develop key transferable skills.</p>
<p>Programme regulations (link to on-line version)</p> <p>C161-1841U: -RC161-1841U</p>

<p>13 Support for Student Learning</p> <p>Generic information regarding University provision is available at the following link.</p> <p>Generic Information</p>
--

<p>14 Methods for evaluating and improving the quality and standards of teaching and learning</p> <p>Generic information regarding University provision is available at the following link.</p> <p>Generic Information</p> <p><i>Accreditation reports</i></p> <p><i>Additional mechanisms</i></p>

<p>15 Regulation of assessment</p> <p>Generic information regarding University provision is available at the following link.</p> <p>Generic Information</p>
--

<p>In addition, information relating to the programme is provided in:</p> <p>The University Prospectus: http://www.ncl.ac.uk/undergraduate/degrees/#subject Degree Programme and University Regulations: http://www.ncl.ac.uk/regulations/docs/</p>

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided.