PROGRAMME SPECIFICATION	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	BSc Hons.
4	**Programme Title**	Marine Biology and Oceanography
5	**UCAS/Programme Code**	CF17
6	**Programme Accreditation**	
7	**QAA Subject Benchmark(s)**	Biology/Earth & Environmental Science
8	**FHEQ Level**	H
9	**Date written/revised**	July 2008

10 Programme Aims

1. To enable everyone on the degree programme to develop a thorough knowledge and understanding of Marine Biology and Oceanography both across, and at the interface between, these two intimately related disciplines, 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 practical and key skills

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

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

4. To provide an advanced 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 Science and other areas of graduate employment

5. To stimulate an informed interest in multidisciplinary Marine Science and engender an awareness of its 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

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 appropriate benchmark statements.

Knowledge and Understanding

On completing the programme students should have, and be able to, demonstrate a knowledge and understanding of:

A1 The biology of marine organisms
A2 The ecology of marine communities
A3 The physical processes occurring in the marine environment
A4 The chemical processes occurring in the marine environment
A5 The role of interdisciplinary marine science in the management of the marine environment
A6 The impact of human activity on the marine environment
A7 Current developments in Marine Biology and Oceanography

Teaching and Learning Methods

Knowledge and understanding (A1 – A7) are principally imparted through lectures and seminars. Seminars and advanced lecture courses in Stage 3 are particularly important in delivering A7 as they provide the opportunity for exposure to knowledge at the 'cutting edge' of advancement in the field. Practical classes, fieldwork and boat work complement knowledge and understanding gained through lectures and seminars. 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.

Assessment Strategy

Knowledge and understanding of the subject are primarily assessed through unseen written examinations and practical reports. These include, in Stage 1, short answer tests to examine the breadth of factual knowledge. Assessed essays/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 and developed progressively throughout Stage 2 to an advanced level in Stage 3 modules. 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 promotes development of hypothesis testing and problem solving skills.

Assessment Strategy

Academic rigour and hypothesis development and testing are primarily assessed through coursework assessments associated with field, boat and laboratory practical exercises, the residential 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. 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 both marine biology and oceanography (e.g. microscopy, water chemical analysis)
C4 Collect and analyse field, ecological and boat-based oceanographic data
C5 Employ computer-based techniques for analysis of oceanographic data

Teaching and Learning Methods

Practical, field and research skills are developed in laboratory, field and boat 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.

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

Teaching and Learning Methods

Key skills (D1 – D6) are taught formally at Stage 1 and developed further at Stage 2. 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 many 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, essays, oral and poster presentations and computer-based assessments. D7 is assessed by unseen written examination in that a General Paper sat as part of **MST3013 Marine Biology and Oceanography Core Activities** includes broad ranging questions that cover the societal role and application of marine science.

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 One, 120 Stage Two, 120 Stage Three
(d) Module credit values vary between 10 and 40. 10 credits represent 100 hours of student activity and 40 credits 400 hours of student activity
(e) Progression: Pass in 120 credits, including all core modules is required in Stages 1 and 2. Non-core modules which are failed with a mark of 35 to 39 can be compensated if the overall mark is 40 or more. The Board of Examiners may pass by discretion if circumstances warrant
(f) Innovative features of the degree include the amount and integration of field studies into the programme, the overseas exercise and the use of external practitioners and case studies to inform Stage 3 teaching. Students undertake 2 weeks of field courses and several other modules include field practical classes

(ii) **Stage One**

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

Three 20-credit **CORE** modules are defined: **Biodiversity of Marine Animals (MST1001) Oceanography and Marine Ecology (MST1002)** and **Field and Laboratory**

Techniques in Marine Biology and Oceanography (MST1013). In addition all students will take the following modules approved by the Degree Programme Director: **Introduction to Marine Environmental Engineering (MST1004: 10-credits); Marine Microbiology and Primary Producers (MST1010: 20 Credits); Marine Zooplankton (MST1011: 10 credits); Research Skills (MST1012: 20 Credits). MST1012 and MST 1013** cover the wide variety of ways in which the marine scientist records marine environmental data, how that information is processed, and how it is subsequently used. All candidates for the Honours degree in Marine Biology and Oceanography must demonstrate a high level of proficiency and knowledge of the subject areas covered by all of the above listed modules.

The three **CORE** modules at Stage One introduce the student to key areas of the syllabus and provide an introduction to practical study through the use of field and laboratory classes. Independent field study with appropriate study guides, video and other methods of learning are also used to provide the candidate with a rich and diverse background to their learning of marine biology and Oceanography, to ensure that the student has developed the skills needed. The courses provide both an overview and an introduction to the subject and the modules are suitable for those proceeding to other scientific disciplines. **The student must pass these core modules**.

At Stage One students will be assigned to personal tutors who will guide them in learning how to supplement the formal taught components of the course with private study. Tutorials will provide a small group study environment where the student will be encouraged to practice 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 One programme the student:

- *will be eager to learn more about marine biology and oceanography,*
- *should have a sound knowledge of these subjects at an introductory level,*
- *understand the basis for the study of interdisciplinary marine science through a combination of biological, chemical and physical sciences.*

Stage Two

On completion of Stage One every student, whatever their cultural or academic background, will have achieved an enhanced basis for more advanced study of the subject at Stage Two of the Honours Marine Biology and Oceanography 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 are introduced. The modules include both pure and applied aspects of the subject material as well as a continuation of basic scientific and information skill related modules.

All students will take the 20-credit compulsory modules **Marine and Coastal Habitats (MST2006),** and **Marine Practical Skills (MST2011),** and the following 10-credit compulsory modules: **Marine Pollution (MST2004); Biological Oceanography (MST2005); Fisheries Biology and Aquaculture (MST2009); Biogeochemistry of estuaries and coastal seas (MST2014); Experimental Design and Statistical Methods (MST2015).** In addition all students will select 30 credits of optional modules, normally from the following 10-credit modules: **Tropical Marine Environments and Ecology (MST2001); Marine Fouling and Larval Ecology (MST2002); Life in Extreme Environments (MST2012); Marine Vertebrates (MST2013).** These build directly on learning during Stage One and introduce additional concepts that will lead into more advanced modules to be studied in Stage Three of the degree programme.

Considerable emphasis is given to the learning of field and laboratory practical techniques. The course therefore includes field study modules, data analysis, statistics

and other numerical methods.

There are modules encouraging learning of the theoretical basis of specific subject areas, for which every student will have to study a variety of sources of information. Each student will also study modules that will enhance related practical skills. These modular elements are designed to develop student skills in information technology, data and information source handling, writing and oral presentation. All of these skills are essential to study at Stage Three, but they will also help facilitate progression to a range of careers following graduation.

On completing the Stage Two programme the student:

- *will have gained a sound knowledge of the biology of marine organisms, and relevant physical and chemical processes in the marine environment,*
- *should have knowledge of the experimental study of a range of marine science disciplines*
- *will 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 tor a marine scientist,*
- *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.*

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

Stage Three

Stage Three 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 the 40-credit compulsory modules **Marine Biology and Oceanography Core Activities (MST3013)** and **Research Project (MST3095)**, and the 20-credit compulsory module **Advanced Marine Biology and Oceanography (MST3016)**. Important components of **MST3013** will be completed during the second summer vacation and the module will explicitly develop further, a number of the skills so learned. Each student will for example, undertake a period of endeavour away from the University as an investigative scientific journalist and will be encouraged to show initiative in seeking a suitable location for this, possibly overseas. Students will be given training in sea survival techniques and safety issues and will undertake an independent scientific investigation on a field course that has traditionally been held at the Isle of Cumbrae to provide them with experience of more diverse marine environments. **MST3013** is designed to bring students an understanding of the thresholds of current research in Marine Sciences and how that knowledge is of benefit to Society. Conceptual ideas presented will provide the basis for in depth private study

Advanced 10-credit modules are also available as options that present their subjects in the context of the current research literature. Each student will normally select two from the following a list of three: **Reproduction and Life Histories (MST3001); Marine Systems Ecology (MST3002); Marine Biogeochemistry (MST3003).**

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

MST3095 is a major component of the course that integrates much of the preceding training. Each student will undertake an independent scientific investigation under the supervision of a staff member of the School and present this as a written dissertation and as an oral presentation, the latter during a student conference involving the class and academic staff members. The oral component will be assessed but each student will have already gained experience of this activity at earlier stages of the degree programme and can expect to have achieved a high level of technical and professional competence by this stage of the degree programme.

Key features of the programme (including what makes the programme distinctive)

This programme integrates the wider ocean sciences with traditional marine biology, providing students with the opportunity to study marine chemistry, physical processes and large scale ocean systems within a biological context. The emphasis on chemistry, seawater properties, waves, tides, nutrient cycling etc makes this programme distinctive from both Marine Biology and Marine Zoology

Programme regulations (link to on-line version)

http://www.ncl.ac.uk/regulations/programme/

13 Criteria for admission

Entry qualifications

GCSE Mathematics (minimum grade C) required.

A-Level Subjects and Grades
BBC/BCC (with the aim that this will be raised to BBB if the course begins to recruit well) from 18 units in 6- or 12-unit qualifications and normally including A level Biology. Chemistry preferred at AS level if not offered at A level but not essential

Scottish Highers
AABB at including two science subjects. Advanced Higher Biology preferred. Chemistry desirable at Higher Grade but not essential.

International Baccalaureate
32 points preferably including Biology at Higher Level Grade 6 or above. Chemistry preferred at Higher Level but not essential. Mathematics or Mathematical Studies and Chemistry required at Standard Level grade 5 if not offered at Higher Level.

Alternative entry qualifications

World-wide qualifications equivalent to 'A' levels accepted

Admissions policy/selection tools

To admit candidates from a wide range of backgrounds and ages, from any country in the world, who are well qualified for the degree course.

Non-standard Entry Requirements
All non-standard applicants are invited for an informal discussion with the Admissions Tutor and Degree Director to ensure that they have the background that will adequately prepare them for the degree course.

PARTNERS scheme
The Marine Biology and Oceanography programme is involved in the Newcastle PARTNERS programme.
The PARTNERS Programme is intended to support students who definitely wish to study at

Newcastle University.
The PARTNERS offer requires students to

- successfully complete the Assessed Summer School
- achieve specific grades in their A/As levels/AVCE/National Diploma course

These grades will be slightly lower than the normal offer for the Marine Biology and Oceanography degree programme to take account of the extra work they do for the Assessed Summer School. The PARTNERS offer for this degree is CDD.

Additional Requirements
None

Level of English Language capability
IELTS 6.5 or equivalent.

14 Support for Student Learning

Induction
During the first week of the first semester students attend a formal induction programme. New students will be given a general introduction to University life and the University's principal support services, and general information about the School and their programme, as described in the Degree Programme Handbook. New and continuing students will be given detailed programme information and the timetable of lectures/practicals/labs/ tutorials/etc. The International Office offers an additional induction programme for overseas students (see http://www.ncl.ac.uk/international/arrival/jan/index.phtml

Study skills support
Students will learn a range of Personal Transferable Skills, including Study Skills, as outlined in the Programme Specification. Some of this material, e.g. time management is covered in the appropriate Induction Programme. Students are explicitly tutored on their approach to both group and individual projects.

Numeracy support is available through Maths Aid. Further details are available at:

http://www.ncl.ac.uk/library/news_details.php?news_id=159 Help with academic writing is available from the Writing Centre. Details can be obtained from Alicia.Cresswell@ncl.ac.uk

Academic support
The initial point of contact for a student is with a lecturer or module leader, or their tutor (see below) for more generic issues. Thereafter the Degree Programme Director or Head of School may be consulted. Issues relating to the programme may be raised at the Staff-Student Committee, and/or at the Board of Studies.

Pastoral support
All students are assigned a personal tutor whose responsibility is to monitor the academic performance and overall well-being of their tutees. Details of the personal tutor system can be found at http://www.ncl.ac.uk/undergraduate/support/tutor.phtml
In addition the University offers a range of support services, including the Student Advice Centre, the Counselling and Wellbeing team, the Mature Student Support Officer, and a Childcare Support Officer, see
http://www.ncl.ac.uk/undergraduate/support/welfare/index.phtml

Support for students with disabilities
The University's Disability Support Service provides help and advice for disabled students at the University - and those thinking of coming to Newcastle. It provides individuals with: advice about the University's facilities, services and the accessibility of campus; details about the technical support available; guidance in study skills and advice on financial support arrangements; a resources room with equipment and software to assist students in their studies. For further details see http://www.ncl.ac.uk/disability-support/

Learning resources
The University's main learning resources are provided by the Robinson and Walton Libraries (for books, journals, online resources), and Information Systems and Services, which supports campus-wide computing facilities, see http://www.ncl.ac.uk/undergraduate/degrees/facilities/index.phtml

All new students whose first language is not English are required to take an English Language Proficiency Test. This is administered by INTO Newcastle University Centre on behalf of Newcastle University. Where appropriate, in-sessional language training can be provided. The INTO Newcastle University Centre houses a range of resources which may be particularly appropriate for those interested in an Erasmus exchange. See http://ncl.ac.uk/langcen/index.htm

15 Methods for evaluating and improving the quality and standards of teaching and learning

Module reviews
All modules are subject to review by questionnaires which are considered by the Board of Studies. Changes to, or the introduction of new, modules are considered at the School Teaching and Learning Committee and at the Board of Studies. Student opinion is sought at the Staff-Student Liaison Committee and/or the Board of Studies. New modules and major changes to existing modules are subject to approval by the Faculty Teaching and Learning Committee.

Programme reviews
The Board of Studies conducts an Annual Monitoring and Review of the degree programme and reports to Faculty Teaching and Learning Committee.

External Examiner reports
External Examiner reports are considered by the Board of Studies. The Board responds to these reports through Faculty Teaching and Learning Committee. External Examiner reports are shared with institutional student representatives, through the Staff-Student Committee.

Student evaluations
All modules, and the degree programme, are subject to review by student questionnaires. Informal student evaluation is also obtained at the Staff-Student Committee, and the Board of Studies. The National Student Survey is sent out every year to final-year undergraduate students, and consists of a set of questions seeking the students' views on the quality of the learning and teaching in their HEIs. Further information is at www.thestudentsurvey.com/ With reference to the outcomes of the NSS and institutional student satisfaction surveys actions are taken at all appropriate levels by the institution.

Mechanisms for gaining student feedback
Feedback is channelled via the Staff-Student Committee and the Board of Studies.

Faculty and University Review Mechanisms
The programme is subject to the University's Internal Subject Review process, see http://www.ncl.ac.uk/aqss/qsh/internal_subject_review/index.php

Accreditation reports
N/A

Additional mechanisms
N/A

16 Regulation of assessment

Pass mark
The pass mark is 40 (Undergraduate programmes)

Course requirements
Progression is subject to the University's Undergraduate Progress Regulations (http://www.ncl.ac.uk/regulations/docs/2007/documents/UGprogress.pdf) and Undergraduate Examination Conventions (http://www.ncl.ac.uk/regulations/docs/2007/documents/UGExamConventions.pdf). In summary, students must pass, or be deemed to have passed, 120 credits at each Stage. Limited compensation up to 40 credits and down to a mark of 35 is possible at each Stage and there are resit opportunities, with certain restrictions.

Weighting of stages
The marks from Stages Two and Three will contribute to the final classification of the degree The weighting of marks contributing to the degree is as follows: Stage 2, 25%; Stage 3, 75%.

Common Marking Scheme
The University employs a common marking scheme, which is specified in the Undergraduate Examination Conventions, namely

	Modules used for degree classification (DC)	**Modules not used for degree classification**
<40	Fail	Failing
40-49	Third Class	Basic
50-59	Second Class, Second Division	Good
60-69	Second Class, First Division	Very Good
70+	First Class	Excellent

Role of the External Examiner
An External Examiner, a distinguished member of the subject community, is appointed by Faculty Teaching and Learning Committee, after recommendation from the Board of Studies. The External Examiner is expected to:

- See and approve examination papers
- Moderate examination and coursework marking
- Attend the Board of Examiners
- Report to the University on the standards of the programme

In addition, information relating to the programme is provided in:

The University Prospectus (see http://www.ncl.ac.uk/undergraduate/)

The School Brochure (contact enquiries@ncl.ac.uk)

The University Regulations (see http://www.ncl.ac.uk/regulations/docs/)

The Degree Programme Handbook

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. The accuracy of the information contained is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

Mapping of Intended Learning Outcomes onto Curriculum/Modules

11 ii

Module	Credit	Status	Intended Learning Outcomes			
			A	B	C	D
Stage 1						
MST1001	20	Core	1	1, 3, 4, 5	1, 3	1, 3, 5, 6
MST1002	20	Core	1, 2, 3, 4, 5	1, 3, 4,	1, 3, 5	1, 4, 5, 6
MST1013	20	Core	1, 2, 3, 4, 5, 6	1,2, 3, 4, 5	1, 2, 3, 4, 5	1, 3, 4, 5, 6
MST1004	10	Cp	3, 4, 5, 6	3, 4, 5	1, 3	1, 4, 5, 6
MST1010	20	Cp	1, 2, 4	3, 4, 5	1, 3	1, 5, 6
MST1011	10	Cp	1, 2	3, 4, 5	1, 3	1, 5, 6
MST1012	20	Cp	5, 6, 7	1, 2, 3, 4, 5	1, 2	1, 2, 3, 4, 5, 6
Stage 2						
MST2004	10	Cp	1, 2, 3, 4, 5, 6	1, 2, 4, 5	1, 3	1, 6
MST2005	10	Cp	3, 4	1, 3, 4, 5	1, 3	1, 5, 6
MST2006	20	Cp	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5	1, 2, 3, 4	1, 3, 5, 6, 7
MST2009	10	Cp	1, 5, 6, 7	1, 3, 4, 5	1, 3	1, 3, 5, 6
MST2011	20	Cp	1, 3, 4, 6, 7	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5, 6
MST2014	10	Cp	3, 4	1, 4, 5	1, 3	1, 5, 6
MST2015	10	Cp	2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5	1, 2, 4	3, 4, 5, 6
MST2001	10	Op	1, 2, 3, 4, 5, 6	1, 2, 4, 5		1, 4, 6
MST2002	10	Op	1, 2, 3, 4, 5, 6, 7	1, 2, 4, 5	1, 2, 3, 4	1, 6, 7
MST2012	10	Op	1, 2, 3, 4, 5, 7	1, 2, 3, 4, 5	1, 2, 3, 4	1, 5, 6
MST2013	10	Op	1, 5, 7	1, 2, 4, 5		1, 4, 6
Stage 3						
MST3013	40	Cp	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5, 6, 7, 8, 9
MST3016	20	Cp	2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5	1, 2,	1, 2, 3, 4, 5, 6, 7, 8, 9
MST3095	40	Cp	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5, 6, 7, 8, 9
MST3001	10	Op	1, 2	1, 2, 3, 4, 5		1, 4, 5, 6, 8
MST3002	10	Op	1, 2, 3, 4, 5, 7	1, 2, 3, 4		1, 4, 5, 6, 7, 8
MST3003	10	Op	3, 4, 5, 7	1, 3, 4, 5		1, 4, 5, 6, 7, 8