Programme Specification

Oceanography (2020-21)

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

Awarding Institution	University of Southampton
Teaching Institution	University of Southampton
Mode of Study	Full-time
Duration in years	1
Accreditation details	Institute of Marine Engineering, Science and Technology (IMarEST)
Final award	Master of Science (MSc) Oceanography
Interim Exit awards	Postgraduate Certificate in Higher Education Postgraduate Diploma in Higher Education
FHEQ level of final award	Level 7
UCAS code	N/A
Programme Code	4906
QAA Subject Benchmark or other external reference	Earth Sciences, Environmental Sciences And Environmental Studies 2019, Master's Degree Characteristics 2016
Programme Lead	Thomas Bibby (tsb)

Programme Overview

Brief outline of the programme

The MSc in Oceanography is a one-year multi-disciplinary programme of instruction and research taught exclusively at the University of Southampton based in the National Oceanography Centre, Southampton (NOCS). It offers you the chance to broaden the science background of your undergraduate degree, while allowing advanced level specialisation in one or more aspects of your chosen field. Since Oceanography is not widely taken at undergraduate level, this Masters course is a conversion course, providing background material as well as more specialised material for research or a career in oceanography.

During your MSc Oceanography degree, you can choose from a range of flexible pathways depending on your research interest. You will develop specific knowledge and skills through your selection of modules and choice of subject for your research project.

The range of pathways include: Physical Oceanography and Climate, Marine Biology and Ecology, Marine Biogeochemistry, Marine Geology and Geophysics

Your contact hours will vary depending on your module/option choices. Full information about contact hours is provided in individual module profiles.

Learning and teaching

You will develop core knowledge and understanding, subject-specific, general and transferable skills via compulsory module and specialised option module lectures, seminars and presentations, laboratory and practical classes, visits, fieldwork, boat-work, independent study, group study and your own research.

You will also undertake courses in

- computer programming and particular software packages;
- lectures on writing and oral communications;
- lectures on health and safety aspects of practical work, followed if appropriate by the development of correct procedures in the laboratory, the field and on the boat;
- use of the internet for accessing data;
- data transfer during group practicals.

A wide range of support is available for those students who have further or specific learning and teaching needs.

Assessment

To test your knowledge and understanding of material presented in the lectures and associated practicals, you will be assessed through a combination of written examinations, essays, computer and laboratory exercises, oral presentations, fieldwork/boat-work reports, short coursework assignments, poster presentations, and research project reports.

A literature review, based on the topic selected for the individual research project, is completed and assessed during Semester 2.

During the summer (May-September) you will carry out a major individual research project.

Special Features of the programme

A conversion degree, MSc Oceanography that enables students from any science or maths background to apply the knowledge of their first degree to the marine environment. This degree allows you to gain a foundation in interdisciplinary marine science and develop an advanced level specialisation in one or more discipline areas. We have developed 'pathways' of suggested, module choices which include:

Marine Biology and Ecology
Physical Oceanography
Marine Biogeochemistry
Marine Geology and Geophysics
Climate Dynamics

Please note: As a research-led University, we undertake a continuous review of our programmes to ensure quality enhancement and to manage our resources. As a result, this programme may be revised during a student's period of registration; however, any revision will be balanced against the requirement that the student should receive the educational service expected. Please read our Disclaimer to see why, when and how changes may be made to a student's programme.

Programmes and major changes to programmes are approved through the University's programme validation process which is described in the University's Quality handbook.

Educational Aims of the Programme

Ocean and Earth Science (OES) is strongly committed to providing the very best learning experience to all our students in a friendly and stimulating environment. We are known nationally and internationally for our excellence in teaching, and we are continually improving the scope and delivery of our activities.

Ocean and Earth Science is housed in the prestigious National Oceanography Centre Southampton (NOCS), which opened in 1995 housing the University of Southampton department and part of the Natural Environment Research Council (NERC)'s National Oceanography Centre. NOCS is one of the world's largest centres devoted to research, teaching and technology development in ocean and Earth science.

Research carried out by academic staff provides direct and enthusiastic input into a challenging and stimulating teaching programme. There are also unique opportunities for students to undertake research projects with scientists outside of OES based at the National Oceanography Centre Southampton or in some cases in collaboration with external organizations.

The specific aims of our programme are to provide you with:

- An extensive and in-depth knowledge of the main branches of oceanography stressing their interactions;
- In-depth training through advanced coursework and an individual research project, which may be multi-disciplinary or directed towards a specific disciplinary branch;
- A sound theoretical knowledge and understanding of ocean processes in all four main disciplines of oceanography (e.g. biological, chemical, geological and physical ocean processes);
- A training in practical marine research methods and application of advanced techniques both through fieldwork and laboratory work;
- A high-quality and intellectually stimulating experience of learning in a supportive environment.
- Vocational training for a professional career in industries related to marine science and applied aquatic environmental science by undertaking a number of specialised applied options and gaining practical experience through project work;
- Enable you to meet the academic requirements, in part, for registration as a Chartered Scientist and Chartered Marine Scientist with the Institute of Marine Engineering, Science and Technology (IMarEST).
- A sound and suitable qualification that would enable you to proceed to a more specialist higher degree at the PhD level.
- Critical appraisal and analysis skills in the field of oceanography and the ability to communicate results to non-specialists;
- Business awareness, communication and presentation skills through group fieldwork, seminar presentations and production of a literature review and project dissertation;
- Direct experience of work on a sustained research project at the forefront of oceanographic knowledge.

Programme Learning Outcomes

Knowledge and Understanding

On successful completion of this programme you will have knowledge and understanding of:

A1. The fundamentals of each major discipline applied to the natural and marine sciences.
A2. The physics of the ocean and an understanding of the processes that control the movement of water, heat and other properties.
A3. The biological processes in the water and how these are affected by the ambient physicochemical conditions.
A4. The basic concepts used in chemical oceanography.
A5. The geological evolution of the ocean basins, and the methods currently employed to investigate the superficial and deep structural features of the sea-bed.
A6. The processes which shape the marine world at different temporal and spatial scales.
A7. The terminology, nomenclature and classification systems used in marine sciences.
A8. Theory, practice, acquisition, analysis and interpretation of oceanographic data across a range of oceanographic applications.
A9. The value and need for multi-disciplinary approaches in advancing knowledge.
A10. A more detailed knowledge and advanced understanding within subject specific options selected from the range available.
A11. A wide selection of topics currently at the frontiers of research and many of the specialist techniques used to investigate them.

Subject Specific Intellectual and Research Skills

On successful completion of this programme you will be able to:

B1. Recognise and use (oceanographic) theories, paradigms, concepts and principles in the context of research;
B2. Critically analyse, synthesise, interpret and summarise complex scientific information.
B3. Collect, record and analyse data in the field and laboratory, using state-of-the-art techniques and equipment;
B4. Read, use and reference the oceanographic work of others in an appropriate manner;
B5. Undertake field and laboratory investigations in a responsible and safe manner, paying due attention to risk assessment, rights of access, relevant health and safety regulations, and sensitivity to the impact of investigations on the environment and stakeholders.

Transferable and Generic Skills

On successful completion of this programme you will be able to:

C1. Collect and integrate several lines of evidence to formulate and test hypotheses;
C2. Apply your knowledge and understanding to address familiar and unfamiliar problems;
C3. Design, implement and report on scientific research projects, including a major research project at the forefront of oceanographic knowledge;
C4. Communicate effectively to a variety of audiences in written, verbal and graphical forms;
C5. Select and use the appropriate method and means of communication for a range of different situations;
C6. Absorb and respond to a variety of information sources (e.g., textual, numerical, verbal, graphical);
C7. Critically use the internet as a means of communication and data dissemination, and as a source of information;
C8. Apply and further develop Numeracy and C & IT Skills;
C9. Synthesise, apply and further develop the computing, statistical and mathematical skills that you brought to the MSc programme from your undergraduate work;
C10. Appreciate statistical issues of sample selection, accuracy, precision and uncertainty during collection, recording and analysis of data in the field and in the laboratory;
C11. Prepare, process and present data, using appropriate qualitative and quantitative techniques and computer software packages and solving numerical problems using computer and non-computer-based techniques;
C12. Develop, where appropriate, advanced skills in computer programming;
C13. Develop interpersonal/teamwork skills;
C14. Recognise and respect the views of other team members;
C15. Evaluate performance as an individual and as a team member;
C16. Understand the roles of individuals in teams and how individuals learn in team groups;
C17. Develop self-management and professional development skills;
C18. Continue to develop the skills necessary for self-managed and life-long learning (such as working independently and within groups, time management and organisation);
C19. Identify and work towards targets for personal, academic and career development;
C20. Develop an adaptable and flexible approach to study and work.

Teaching and Learning Methods

To assist the development of your knowledge and understanding of the marine geosciences/ocean sciences we use a wide range of teaching methods. You will develop core knowledge and understanding via compulsory modules and specialised option module lectures, student-led seminars and presentations, laboratory and practical classes, case studies, fieldwork, boatwork, guided independent study, group study and your own research. A wide range of support is available for those students who have further or specific learning and teaching needs.

Assessment Methods

To test your knowledge and understanding of material presented in the lectures and associated practicals, you will be assessed via a combination of written examinations, oral presentations, essays, poster presentations, laboratory experiment write-ups, and fieldwork/boatwork reports.

In addition, during Semester 2, you will complete both a literature review related to the research topic of your individual research project and a research proposal based on your individual research project, which will be assessed by the project supervisor and an independent second marker.

All students carry out a major individual research project, culminating in project seminar and submission of a dissertation that is assessed by both your supervisor and independent second marker.

Summative assessment contributes to your marks and usually involves a combination of unseen written examinations (at the end of the study module) and coursework (which includes essays, project reports, and computing practicals, etc.). Assessment of your knowledge and understanding is undertaken primarily via these summative assessment methods; in addition, you will receive feedback on all formally

assessed work.

Additional support can be provided for those students who have further or specific needs.

Programme Structure

The programme structure table is below:

Information about pre and co-requisites is included in individual module profiles.

Where optional modules have been specified, the following is an indicative list of available optional modules, which are subject to change each academic year. Please note in some instances modules have limited spaces available.

Oceanography General Pathway

Part I

Part I Compulsory

Code	Module Title	ECTS	Type
SOES6013	Introduction to Biological Oceanography 2020-21	3.75	Compulsory
SOES6015	Introduction to Chemical Oceanography 2020-21	3.75	Compulsory
SOES6016	Introduction to Marine Geology 2020-21	3.75	Compulsory
SOES6014	Introduction to Physical Oceanography 2020-21	3.75	Compulsory
SOES6018	MSc Key Skills and Literature Review 2020-21	7.5	Compulsory
SOES6039	MSc Research Project 2020-21	30	Compulsory

Part I Optional (please choose FIVE)
These are the modules for the whole year, some are only available in semester 1 and some only in semester 2. Further details are available on the Ocean and Earth Sciences website at www.southampton.ac.uk/soes.

Code	Module Title	ECTS	Type
SOES6004	Applied and Marine Geophysics 2020-21	7.5	Optional
SOES6007	Biogeochemical Cycles in the Earth System 2020-21	7.5	Optional
SOES6006	Climate Dynamics 2020-21	7.5	Optional
SOES3014	Coastal Sediment Dynamics 2020-21	7.5	Optional
SOES6025	Computational Data Analysis for Geophysicists and Ocean Scientists 2020-21	7.5	Optional
SOES6008	Deep Sea Ecology 2020-21	7.5	Optional
SOES6021	Ecological Modelling 2020-21	7.5	Optional
SOES6023	Environmental Radioactivity and Radiochemistry 2020-21	7.5	Optional
SOES6037	Geodynamics and Solid Earth Geophysics 2020-21	7.5	Optional

SOES6047	Global Climate Cycles 2020-21	7.5	Optional
SOES6073	Global Ocean Carbon Cycle, Ocean Acidification and Climate 2020-21	7.5	Optional
SOES6017	Introductory Remote Sensing of the Ocean 2020-21	7.5	Optional
SOES6005	Large Scale Ocean Processes and Climate 2020-21	7.5	Optional
SOES6076	Marine Conservation and Policy 2020-21	7.5	Optional
SOES6022	Microfossils, Environment and Time 2020-21	7.5	Optional
SOES6011	Modelling Coastal Processes 2020-21	7.5	Optional
SOES6051	Reproduction in Marine Invertebrates 2020-21	7.5	Optional
SOES6024	Seafloor Exploration and Surveying 2 2020-21	7.5	Optional

Progression Requirements

The programme will follow the University's regulations for **Progression, Determination and Classification of Results: Standalone Masters Programmes** as set out in the General Academic Regulations in the University Calendar: http://www.calendar.soton.ac.uk/sectionIV/sectIV-index.html

Support for student learning

There are facilities and services to support your learning some of which are accessible to students across the University and some of which will be geared more particularly to students in your particular Faculty or discipline area.

The University provides:

- library resources, including e-books, on-line journals and databases, which are comprehensive and up-to-date; together with assistance from Library staff to enable you to make the best use of these resources
- high speed access to online electronic learning resources on the Internet from dedicated PC Workstations onsite and from your own devices; laptops, smartphones and tablet PCs via the Eduroam wireless network. There is a wide range of application software available from the Student Public Workstations.
- computer accounts which will connect you to a number of learning technologies for example, the Blackboard virtual learning environment (which facilitates online learning and access to specific learning resources)
- standard ICT tools such as Email, secure filestore and calendars.
- access to key information through the MySouthampton Student Mobile Portal which delivers timetables, Module information, Locations, Tutor details, Library account, bus timetables etc. while you are on the move.
- IT support through a comprehensive website, telephone and online ticketed support and a dedicated helpdesk in the Hartley Library.
- Enabling Services offering support services and resources via a triage model to access crisis management, mental health support and counselling. Support includes daily Drop In at Highfield campus at 13.00 – 15.00 (Monday, Wednesday and Friday out of term-time) or via on-line chat on weekdays from 14.00 – 16.00. Arrangements can also be made for meetings via Skype.
- assessment and support (including specialist IT support) facilities if you have a disability, long term health problem or Specific Learning Difficulty (e.g. dyslexia)
- the Student Services Centre (SSC) to assist you with a range of general enquiries including financial matters, accommodation, exams, graduation, student visas, ID cards
- Career and Employability services, advising on job search, applications, interviews, paid work, volunteering and internship opportunities and getting the most out of your extra-curricular activities alongside your degree programme when writing your CV.
- Other support that includes health services (GPs), chaplaincy (for all faiths) and 'out of hours' support for students in Halls and in the local community (18.00-08.00).
- A Centre for Language Study, providing assistance in the development of English language and study skills for non-native speakers.

The Students' Union provides

- an academic student representation system, consisting of Course Representatives, Academic Presidents, Faculty Officers and the Vice-President Education; SUSU provides training and support for all these representatives, whose role is to represent students' views to the University.
- opportunities for extracurricular activities and volunteering
- an Advice Centre offering free and confidential advice including support if you need to make an academic appeal
- Support for student peer-to-peer groups, such as Nightline.

Associated with your programme you will be able to access:

- Programme and module guides/information. Hard copies are available but are mainly published on the web: http://www.southampton.ac.uk/oes/postgraduate/index.page? and www.blackboard.soton.ac.uk
- A number of well-resourced lecture/meeting rooms and a suite of modern, first class, specialist laboratories and analysis facilities.
- Three additional computer clusters which are available at the NOCS for your use shared with undergraduate students. Additional computer clusters are available for your use on the other University campuses.
- Training on Ocean and Earth Science's research launch, RV Callista, which is fully equipped for boatwork practicals and project work in the local estuary and coastal waters and in our shore-side laboratory and aquarium facilities.
- Equipment to support your field work, including laptop computers, GPS, specialised shipboard data acquisition systems deployed from the 19m research catamaran RV Callista.
- A research-led environment, which provides a high-quality learning environment for students.
- A dedicated Student Office whose role is to support both staff and students in the administration of postgraduate teaching and research within the Academic Unit. This is normally your first port of call for issues relating to the administration of your programme (e.g. registration, timetables, module courses, coursework submission, sickness and absence, examinations, staff whereabouts, etc.)
- A core team of academic staff will be available that aim to provide personalised pastoral and academic guidance care for all MSc students during their year spend at NOCS.
- Access via email which is freely available at all times and personal contact with all teaching staff.

Methods for evaluating the quality of teaching and learning

You will have the opportunity to have your say on the quality of the programme in the following ways:

- Completing student evaluation questionnaires for each module of the programme
- Acting as a student representative on various committees, e.g. Staff Student Liaison Committees, Faculty Programmes Committee OR providing comments to your student representative to feed back on your behalf.
- Serving as a student representative on Faculty Scrutiny Groups for programme validation
- Taking part in programme validation meetings by joining a panel of students to meet with the Faculty Scrutiny Group.

The ways in which the quality of your programme is checked, both inside and outside the University, are:

- Regular module and programme reports which are monitored by the Faculty.
- Programme validation, normally every five years.
- Professional body accreditation/inspection by IMAREST.
- External examiners, who produce an annual report.
- A national Research Assessment Exercise (our research activity contributes directly to the quality of your learning experience).
- Institutional Review by the Quality Assurance Agency.

Further details on the University's quality assurance processes are given in the *Quality handbook*.

Career Opportunities

Employment in the marine environmental sector and PhD research are common destinations for graduates.

The strength and prestige of our degrees are recognised by a wide spectrum of employers who view our graduates as well-qualified scientists who possess excellent personal and transferable skills profiles such as numeracy, communication and team-working. Furthermore, our graduates are seen as having a greater degree of independence and self-reliance than any comparable graduates.

We pride ourselves in the quality of the scientists that we produce and given our national standing, it is our experience that all our well qualified postgraduates are able to progress into a career of direct relevance to their training, should they wish.

Students from the National Oceanography Centre Southampton enter a broad range of careers, ranging from industrial, commercial and governmental positions, to academic and research posts.

Career destinations and advice can be found at: http://www.soton.ac.uk/careers/ and http://www.southampton.ac.uk/postgraduate/careerprospects/

External Examiner(s) for the programme

Marine Geology and Geophysics	Name: Dr James Hammond- Birkbeck, University of London
Marine Biogeochemistry	Name: Dr Matthew Witt- University of Exeter

Students must not contact External Examiner(s) directly, and external examiners have been advised to refer any such communications back to the University. Students should raise any general queries about the assessment and examination process for the programme with their Course Representative, for consideration through Staff: Student Liaison Committee in the first instance, and Student representatives on Staff: Student Liaison Committees will have the opportunity to consider external examiners' reports as part of the University's quality assurance process.

External examiners do not have a direct role in determining results for individual students, and students wishing to discuss their own performance in assessment should contact their Personal Academic Tutor in the first instance.

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided. More detailed information can be found in the programme handbook.

Appendix 1:

Students are responsible for meeting the cost of essential textbooks, and of producing such essays, assignments, laboratory reports and dissertations as are required to fulfil the academic requirements for each programme of study. In addition to this, students registered for this programme also have to pay for:

Additional Costs

Type	Details
Clothing	Lab coats and safety spectacles: Marine Biology students will receive a lab coat, dissection kit and waterproof notebook during Induction. If these are lost the student must replace them at their own expense. Fieldcourse clothing: You will need to wear suitable clothing when attending fieldcourses, e.g. waterproofs, walking boots. You can purchase these from any source.
IT	Data Storage: Students are expected to provide their own data storage device Software Licenses: Will be provided by the University where appropriate. Hardware : It is advisable that students provide their own laptop or personal computer, although shared facilities are available across the University campus.
Stationery	You will be expected to provide your own day-to-day stationary items, e.g. pens, pencils, notebooks, etc). Any specialist stationery items will be specified under the Additional Costs tab of the relevant module profile.
Textbooks	Where a module specifies core texts these should generally be available on the reserve list in the library. However due to demand, students may prefer to buy their own copies. These can be purchased from any source. Some modules suggest reading texts as optional background reading. The library may hold copies of such texts, or alternatively you may wish to purchase your own copies. Although not essential reading, you may benefit from the additional reading materials for the module.
Approved Calculators	Candidates may use calculators in the examination room only as specified by the University and as permitted by the rubric of individual examination papers. These may be purchased from any source and no longer need to carry the University logo.
Fieldwork: logistical costs	For compulsory residential fieldcourses accommodation and travel are normally provided. You are usually expected to cover the costs of food and drink, although some courses may include meals. For optional fieldcourses, you may be asked to make a contribution to the travel and/or accommodation costs. Additionally, if travelling abroad you may incur costs for travel and health insurance; visa costs; vaccinations/immunisation. Specific details on what additional costs there will be are detailed in the individual module profiles which can be found under the modules tab of the programmes details of the relevant academic unit. In addition, some modules may offer a one-day fieldcourse. Normally transport to the location is provided, but you will be expected to cover your food and drink costs for that day.
Equipment and Materials	Field Equipment and Materials: A number of essential items will be provided to you if they are required on your programme e.g.: field notebook(s); compass-clinometer; geological hammer; steel tape measure; map case; pocket lens (x 10); safety helmet; safety goggles; bottle of dilute hydrochloric acid. If items provided are lost replacements will need to be purchased. However, you will need provide yourselves with a ruler; a pair of compasses; set squares; protractor; pencils (including coloured); eraser; calculator, penknife. These can be purchased from any source. Laboratory Equipment and Materials: Laboratory equipment and consumables will be provided where appropriate.
Printing and Photocopying Costs	Where possible, coursework such as essays; projects; dissertations is likely to be submitted on line. However, there are some items where it is not possible to submit on line and students will be asked to provide a printed copy. A list

	of the University printing costs can be found here: http://www.southampton.ac.uk/isolutions/students/printing-for-students.page You can pay for your printing by using the money loaders or by using print copy payment service by going to www.printcopypayments.soton.ac.uk Please remember that we are unable to refund any credit that has not been used by the end of your course, so please consider this when topping up your printing/copy account The University Print Centre also offer a printing and copying service as well as a dissertation/binding service. Current printing and copying costs can be found here. They also provide a large format printing service, e.g. Academic posters.

In some cases, you'll be able to choose modules (which may have different costs associated with that module) which will change the overall cost of a programme to you. Details of such costs will be listed in the Module Profile. Please also ensure you read the section on additional costs in the University's Fees, Charges and Expenses Regulations in the University Calendar available at www.calendar.soton.ac.uk.