

Programme Specification

Marine Environment and Resources (2019-20)

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 Bordeaux 1/Universite Bordeaux 1;; University of Liège/Universite Liege, University of Southampton, University of the Basque Country/Euskal Herriko Unibertsitatea
Mode of Study	Full-time
Duration in years	2
Accreditation details	None
Final award	Master of Science (MSc)
Name of award	Marine Environment and Resources
Interim Exit awards	Master of Science (MSc) Postgraduate Certificate Postgraduate Diploma
FHEQ level of final award	Level 7
UCAS code	N/A
Programme code	4933
QAA Subject Benchmark or other external reference	Earth Sciences, Environmental Sciences And Environmental Studies 2014 Master's Degree Characteristics 2016
Programme Lead	Duncan Purdie (dap)

Programme Overview

Brief outline of the programme

This Joint European Master of Science (MSc) in Marine Environment and Resources, acronym 'MER', is a Joint European degree programme that has been developed by leading European institutions in the field of marine environment and resources with three European countries (UK, Spain, France and Belgium). The programme is a two year Masters course consisting of 4 Semesters of full-time study (120 ECTS). Student mobility is compulsory so that each student must undertake the Programme by enrolling at three of the four Parties (including for completion of the project).

Employers in the public and private sectors require top quality graduates as managers, planners, policy makers, researchers or advisors who can make a difference in marine environmental resource management. They need people who have the ability to think through complex issues, who can analyse the marine environment and its resources, including sustainable development, through field measurements and modelling, who are capable of managing projects and programmes, and have well developed leadership and personal skills.

The programme's objective is to provide these graduates by attracting highly qualified and motivated students from around the world into a fully integrated world class EU Masters programme that combines the best elements of existing courses offered by the consortium members. A memorandum of agreement (MoA) has been drafted between the four Parties. It sets out the nature of the collaboration between the partners of this European MSc. The MoA is a consortium-level document. All Partners have overall responsibility for the academic standards and quality of the Programme delivered under this Agreement; this responsibility is normally exercised through the Joint Programme Board (JPB).

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, tutor-led and student-led tutorials, 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, in the field and on the boat;
- use of the internet for accessing data, access to module information;
- data transfer during group practicals, and general communication with staff and students;
- a professional development workshop.

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/boatwork reports, short coursework assignments, poster presentations, and research project reports.

Special Features of the programme

This Programme is a Joint European MSc aimed at attracting well qualified and motivated students with first degrees in a scientific or engineering discipline to study for a fully integrated world-class EU MSc programme.

The programme was conceived by,

- University of Southampton (SOTON)
- Université de Bordeaux (UB)
- Université de Liège (ULg)
- Universidad del País Vasco/Euskal Herriko Unibertsitatea (UPV/EHU)

The MSc provides students with competences and skills to develop a marine career in the following fields:

- integrated coastal zone management;
- protection of marine and estuarine environments;
- adaptation to global climate change;

- assessment of marine ecosystem health;
- conservation of biodiversity and natural heritage; and
- management of fisheries and other marine resources.

The degree offers:

- A high quality postgraduate education in marine environment and resources on the basis of practical, analytical and numerical approaches.
- A postgraduate degree with a strong research element, at internationally recognised training centres in marine science.
- Advanced training in marine exploration techniques, laboratory analyses and mathematical modelling.
- Opportunities to develop key skills in marine data processing and analysis, with research experience gained through an individual advanced research project.
- Training in marine resource management and sustainable development, from academic and practical perspectives.
- Direct experience of work on a sustained research project at the forefront of marine environment knowledge.
- Opportunities to train alongside world class scientists in a research-led environment.
- Vocational training for a professional career in industries related to the marine environment and resource management.
- A sound and suitable qualification that would enable you to proceed to a more specialist higher degree at the PhD level.
- Opportunities to develop critical and analytical problem-solving powers and the ability to communicate results to non-specialists.
- Opportunities to develop a range of generic skills including: critical and reflective thinking, articulate communication and the skills of literacy and numeracy.
- A high quality and intellectually stimulating experience of learning in supportive environments.

The programme is aimed to respond to challenges of the recent European Marine Strategy and Water Framework Directives and is designed to allow specialisation in particular areas of marine science.

A pivotal goal of the programme is to promote international and European cultural exchange and interactions among students.

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

The School of Ocean and Earth Science (SOES) 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 are continually improving the scope and delivery of our activities.

The School of 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 SOES based at the National Oceanography Centre Southampton or in some cases in collaboration with external organizations.

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

- A high quality postgraduate education in marine environment and resources on the basis of practical, analytical and numerical approaches.
- A postgraduate degree with a strong research element, at internationally recognised training centres in marine science.
- Advanced training in marine exploration techniques, laboratory analyses and mathematical modelling.
- Opportunities to develop key skills in marine data processing and analysis, with research experience gained through an individual advanced research project.
- Training in marine resource management and sustainable development, from academic and practical perspectives.
- Direct experience of work on a sustained research project at the forefront of marine environment knowledge.
- Opportunities to train alongside world class scientists in a research-led environment.
- Vocational training for a professional career in industries related to the marine environment and resource management.
- A sound and suitable qualification that would enable you to proceed to a more specialist higher degree at the PhD level.
- Opportunities to develop critical and analytical problem-solving powers and the ability to communicate results to non-specialists.
- Opportunities to develop a range of generic skills including: critical and reflective thinking, articulate communication and the skills of literacy and numeracy.
- A high quality and intellectually stimulating experience of learning in supportive environments.

Programme Learning Outcomes

Knowledge and Understanding

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

- A1. The ocean processes in the main disciplines of oceanography (e.g. biological, chemical, geological and physical) at an advanced level.
- A2. The processes which shape the marine world at different temporal and spatial scales.
- A3. The terminology, nomenclature and classification systems used in the marine environmental sciences.
- A4. Theory, practice, acquisition, analysis and interpretation of data across a range of marine environmental applications.
- A5. The value and need for multi-disciplinary approaches in advancing knowledge.
- A6. The application of oceanographic knowledge to contribute to the sustainable management of the environment and resources.
- A7. 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. Understand the scientific process and its role in marine resource management.
- B2. Recognise and use theories, paradigms, concepts and principles to design and undertake primary research in the context of the marine environment and living/non-living marine resources.
- B3. Critically analyse, synthesise, interpret and summarise complex scientific information.
- B4. Collect, record, and analyse marine environmental data in the field and in the laboratory, using state-of-the-art techniques and equipment.
- B5. Read, use and reference the marine environmental work of others in an appropriate manner.
- B6. 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. Collecting and integrating several lines of evidence to formulate and test hypotheses;
- C2. Applying your knowledge and understanding to address familiar and unfamiliar problems;
- C3. Designing, implementing and reporting 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 using the internet as a means of communication and data dissemination, and as a source of information;
- C8. Numeracy and C & IT Skills;
- C9. Synthesising, applying and further developing the computing, statistical and mathematical skills that you brought to the MSc programme from your undergraduate work;
- C10. Appreciating statistical issues of sample selection, accuracy, precision and uncertainty during collection, recording and analysis of data in the field and in the laboratory;
- C11. Preparing, processing and presenting data, using appropriate qualitative and quantitative techniques and computer software packages and solving numerical problems using computer and non-computer-based techniques;
- C12. Developing, where appropriate, advanced skills in computer programming;
- C13. Identify individual and collective goals and responsibilities and performing in an appropriate manner;
- C14. Recognising and respecting the views of other team members;
- C15. Evaluating performance as an individual and as a team member;
- C16. Understanding the roles of individuals in teams and how individuals learn in team groups;
- C17. Self-Management and Professional Development Skills;
- C18. Continuing to develop the skills necessary for self-managed and life-long learning (such as working independently and within groups, time management and organisation);

- C19. Identifying and working towards targets for personal, academic and career development;
- C20. Developing an adaptable and flexible approach to study and work;

Programme Structure

Throughout the programme students can make a selection between (3) alternative [mobility pathways](#) (UBX-EHU-SOTON; UBX-EHU-ULg; SOTON-EHU-ULg).

MER students have the opportunity to travel, from molecular biology to remote sensing issues; and from short-term phenomena (e.g. tides and intertidal variability) to their long-term consequences (e.g. ocean acidification).

UBX – EHU – SOTON Pathway

Semester 1: UBX

Compulsory

Biological Oceanography (6 ECTS)
 Chemical Oceanography (6 ECTS)
 Dynamic Oceanography (6 ECTS)
 Seafloor Geology (6 ECTS)
 Analyses of Environmental Data and Modelling (6 ECTS)

Semester 2: EHU

Compulsory

Research in Marine Environment and Resources (6 ECTS)
 Optional – Six x 4 ECTS modules from the following:
 Instrumentation and Measurements in Operational Oceanography
 Marine Primary Production
 Satellite Oceanography and Meteorology
 Advanced Instrumental Analysis
 Cellular and Molecular Biomarkers
 Degradation and Rehabilitation of Estuarine Ecosystems
 Ecological Quality Assessment in Coastal Ecosystems
 Ecotoxicity Bioassays in Aquatic Risk Assessment
 Environmental Analytical Chemistry Environmental Genomics
 Eutrophication and Harmful Algae
 Fish and Shellfish Parasitology
 Fish and Shellfish Reproduction and Endocrinology
 Fish Welfare and Seafood Quality
 Histology and Histopathology of Aquatic Animals
 Marine Molecular Biology and Biotechnology
 Molecular Population Genetics of Fish and Shellfish
 Physiological Energetics of Marine Organisms
 Fisheries Socio-Economics
 Sustainable Fisheries Management
 Multicultural Integration in EU Environmental Data Analysis
 Introduction to Research Activities

Interim Exit Award – Postgraduate Certificate

Semester 4: Soton or UPV or Liege or Collaborating Organisation

Research Project

SOTON – EHU - ULg Pathway

Semester 1: Soton

Compulsory

SOES6013 Introduction to Biological Oceanography (3.75 ECTS)
SOES6014 Introduction to Physical Oceanography (3.75 ECTS)
SOES6015 Introduction to Chemical Oceanography (3.75 ECTS)
SOES6016 Introduction to Marine Geology (3.75 ECTS)

Optional – one 7.5 ECTS Module from the following:

SOES6074 Contemporary Topics in Oceanography
SOES3014 Coastal Sediment Dynamics
SOES6004 Applied & Marine Geophysics
SOES6005 Large Scale Ocean Processes and Climate
SOES6007 Biogeochemical Cycles in the Earth System *
SOES6008 Deep Sea Ecology
SOES6009 Zooplankton Ecology & Processes
SOES6017 Introductory Remote Sensing of the Ocean *
SOES6037 Geodynamics and Solid Earth Geophysics
SOES6061 Marine GeoArchaeology
SOES6022 Microfossils Environment and Time
SOES6025 Computational Data Analysis for Geophysicists and Ocean Scientists
*Equivalent modules are also offered at Liege and are therefore mutually exclusive.

Interim Exit Award – Postgraduate Certificate

Semester 2: EU

Compulsory

Research in Marine Environment and Resources (6 ECTS)

Optional – Six x 4 ECTS modules from the following:

Instrumentation and Measurements in Operational Oceanography
Marine Primary Production
Satellite Oceanography and Meteorology
Advanced Instrumental Analysis
Cellular and Molecular Biomarkers
Degradation and Rehabilitation of Estuarine Ecosystems
Ecological Quality Assessment in Coastal Ecosystems
Ecotoxicity Bioassays in Aquatic Risk Assessment
Environmental Analytical Chemistry Environmental Genomics
Eutrophication and Harmful Algae
Fish and Shellfish Parasitology
Fish and Shellfish Reproduction and Endocrinology
Fish Welfare and Seafood Quality
Histology and Histopathology of Aquatic Animals
Marine Molecular Biology and Biotechnology
Molecular Population Genetics of Fish and Shellfish
Physiological Energetics of Marine Organisms
Fisheries Socio-Economics
Sustainable Fisheries Management
Multicultural Integration in EU Environmental Data Analysis
Introduction to Research Activities

Semester 3: Liege

Compulsory

Interdisciplinary Aspects of Marine Science (6ECTS)

Optional - Four x 6 ECTS from the following

Marine Plant Biology and Ecology
Marine Ecology
Marine Nutrient Dynamics and Ecosystem Modelling

Advanced Marine Zoology
Biochemistry, Physiology and Production of Marine Animals
Ecotoxicity and Biodegradation of Marine Pollutants
Threats to Marine Mammals
Functional and Molecular Marine Microbiology
Numerical Methods Applied to the Environment
Biogeochemical Cycles in the Oceans *
Remote sensing of the Oceans *
Policies for Marine Environment and Resources Management *

*Can only be taken if not already studied at Southampton

Semester 4: Soton or UPV or Liege or Collaborating Organisation

Research Project

Progression Requirements

To progress from Semester 1 (30 ECTS) to Semester 2 (30 ECTS), you must achieve a pass in all 30 ECTS of modules with compensation allowed for 7.5 ECTS. Failed modules must be referred in.

To progress from Semester 2 (30 ECTS) to Semester 3 (30 ECTS) you must achieve a pass in all 30 ECTS of modules with compensation allowed for 7.5 ECTS. Failed modules must be referred in.

In order to proceed to the research project dissertation, you must achieve a pass in all modules with compensation allowed for 15 ECTS - Semesters 1-3 (90 ECTS).

Each Party is responsible for the assessment of your modules during your period of study at their institution and will use its own grading systems.

The marks awarded for each institutions' examinations systems will be converted into marks for the Final award using an agreed Marks Translation Scheme.

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:

- The National Oceanographic Library in NOCS provides exceptional library resources for this MSc MER degree, 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 at Southampton 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.
- A dedicated 'Masters' room with computer and high speed Internet access.
- 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 the School of 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 Ocean and Earth Science. 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 personal supervisor system which aims to provide personalised pastoral and academic care for all students. You will be allocated a member of the academic staff as your personal supervisor on arrival at University, and he/she will be charged with your guidance throughout your postgraduate career.
- 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.
- 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

Successful completion of this programme will prepare the student for a leadership role in various marine sectors such as conservation and environmental management, fisheries, non-governmental organisations and all levels of government from local to global.

European employers in the public and private sectors require top quality graduates as managers, planners, policy makers, researchers or advisors who can make a difference in marine environmental resource management. They need people who have the ability to think through complex issues, who can analyse the marine environment and its resources, including sustainable development, through field measurements and modelling, which are capable of managing projects and programmes, and have well developed leadership and personal skills.

The MER consortium support career development from the point of enrolment. At UPV a careers' prospect is delivered once registration has been formalised and is also available online in the MER MSc website. The prospect contains:

- guidelines, links and references to orientate the student about potential careers and professional prospects;
- interesting links for job seeking; and
- examples of real published job offers to let them know which are the requisites and conditions for different employment opportunities in the real world.

The prospect is yearly revised, together with the website update. The tutor and the supervisor will also advise each student on potential careers and opportunities.

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

Name: Dr Sarah Reynolds - University of Portsmouth

Name: Dr Mark Hartl - University of Edinburgh

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.