UNIVERSITY OF
NEWCASTLE UPON TYNE

FACULTY OF
SCIENCE, AGRICULTURE & ENGINEERING

DEGREE PROGRAMME SPECIFICATION

UNIVERSITY OF NEWCASTLE

1.	**Awarding Institution**	University of Newcastle upon Tyne
2.	**Teaching Institution**	University of Newcastle upon Tyne
3.	**Final Award**	MSc in chosen discipline
4.	**Programme Title**	Multi-disciplinary programme in: Marine Electrical Power Technology Marine Engineering Marine and Offshore Power Systems Marine Structures and Integrity Marine Technology Marine Transport with Management Naval Architecture Offshore Engineering Offshore and Environmental Technology Pipeline Engineering
5.	**Programme Accredited by:**	Not Applicable
6.	**UCAS Code**	Not Applicable
7.	**QAA Benchmarking Group(s)**	Not Applicable
8.	**Date of production/revision**	March 2002 August 2004

9. Programme Aims:

The overall aims of the multi-disciplinary programme are to produce graduates who have developed well founded knowledge, skills and understanding within one or more specific subject areas of marine technology in its widest sense. The coupling of a sound theoretical grasp of the subject with practical application, awareness of responsibilities to society and the environment, and the requirement for flexibility, are regarded as essential to the process of becoming a professional marine technologist.

Specifically, the programme aims:

- To equip students having diverse backgrounds with knowledge skills and understanding in their chosen programme.

- To equip students with appropriate transferable practical skills in computing and information technology, data collection and analysis, problem formulation and solving and communication skills, both oral and written.

- To enable students to enhance their learning experience, particularly with respect to project, by benefiting from the School's exceptional research led teaching.

- To encourage students to develop awareness and responsible attitudes towards the needs of society and the environment in the application of their engineering knowledge, including a regard for safety appropriate to their profession.

- To produce graduates who are recognised by the maritime industry worldwide as fully equipped to contribute at a professional engineering level, especially where a Master's degree is required.

- To instil in students an awareness of their professional responsibilities and the need for their own continuing professional development.

- To contribute to the working environment within the Department, such that students enjoy the University learning experience and wish to maintain contact with the Department in its future activities, professionally as well as socially.

- To provide a programme which meets the FHEQ at Honours level and which takes appropriate account of the subject benchmark statements in ???? (*modify appropriately for M programmes*)

10. Intended Learning Outcomes; Teaching and Learning Strategies and Methods; Assessment Strategies and Methods

The intended learning outcomes are generic across the different disciplines although they are set in the context appropriate to the course titles.

A Knowledge and understanding

A successful student will have gained and be able to demonstrate:

A1 Mathematics and physics appropriate to marine technology and related fields;

A2 Detailed knowledge and understanding of facts, concepts, principles and theories relevant to the student's chosen area of specialisation within Marine Technology;

A3 Knowledge of IT applications to the selected fields of study;

A4 Conceptual and detailed design of artefacts appropriate to their area of specialisation;

A5 Where appropriate, management principles and business practices, including professional and ethical responsibilities;

A6 The role of marine technologists in society and the constraints within which their engineering judgement will be exercised;

A7 Production practice including codes of practice and regulatory framework;

A8 The assessment of safety risks, and the legislative framework for safety.

Teaching/learning methods and strategies:

Acquisition of A.1 and A.2 is through a combination of lectures, tutorials, example classes, laboratory activities and coursework. Outcome A.3 is achieved by lectures, tutorials and, where appropriate, hands-on computer exercises. Acquisition of A.4 and A.5 is through lectures, tutorials, case studies, laboratory experiments and student investigations and presentations. Outcome A.6 depends primarily on lectures and tutorial studies. The broader professional outcomes, A.7, are taught by lectures and coursework studies. Outcome A.8 is formally taught in lectures and developed in tutorials, but is also central to experimental project investigations.

Throughout the student is encouraged to undertake independent reading both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject.

Assessment

Formative assessment occurs through tutorial examples and coursework. The primary means of assessing factual knowledge is the closed book examination. This is supported by assessed coursework and case studies, which involve both written and oral presentations. In depth individual learning frequently forms part of the project, which is assessed by dissertation and, for selected students, viva voce examination.

B Subject –specific/professional skills

Within the context of his chosen discipline, a successful student will be able to:

B1 Use appropriate mathematical methods for modelling and analysing problems in marine technology;

B2 Select appropriate experimental set-up and procedures;

B3 Carry out experimental laboratory work in a professional manner;

B4 Write computer software and use it, or commercial packages, for appropriate tasks;

B5 Design a system, component or process in selected fields;

B6 Test design ideas practically through laboratory work or simulation with technical analysis and to evaluate the results critically;

B7 Search for information for the further development of ideas;

B8 Apply engineering techniques taking account of industrial and commercial constraints;

B9 Manage projects effectively.

Teaching/learning methods and strategies:

The skills associated with C1-C3 are acquired principally through experience gained in coursework and the project. IT skills (C4) are developed initially through lectures and through hands-on exercises and assignments. Further individual learning may also form a significant part of the project. Skill in designing products or processes is acquired through lectures, and developed through case studies and/or the project. Case studies provide initial opportunities for developing the skills associated with C6 and C7, but the project forms the principal vehicle for their acquisition. The skills required for C8 are acquired initially through lectures and developed by case studies. Some projects may require further individual learning in this area. Effective project management is learnt through course works and the project.

Assessment

Practical skills are assessed through laboratory experiment write-ups, coursework reports, project reports and presentations.

C Cognitive skills

A successful student will be able to:

C1 Select and apply appropriate mathematical methods for modelling and analysing relevant problems;

C2 Use scientific principles in the development of engineering solutions to practical problems;

C3 Use scientific principles in the modelling and analysis of engineering systems, processes and products;

C4 To select and apply appropriate computer based methods for modelling and analysing problems in selected fields;

C5 Be creative in the solution of problems and in the development of designs;

C6 Integrate and evaluate information and data from a variety of sources;

C7 Take an holistic approach to solving problems and designing systems, applying professional judgements to balance risks, costs, benefits, safety, reliability, aesthetics and environmental impact.

Teaching/learning methods and strategies:

Where appropriate, B1 is reinforced in lectures, but learning is principally in tutorials and assignments. The abilities characterised by B2 – B4 are initially encountered in lectures, practical classes and case studies, but are developed principally during the research project. Acquisition of B5 occurs through lectures and case studies and may form a major part of the project. Experimental, research and design skills are further developed through coursework activities, laboratory experiments, and research and design projects. Individual feedback is given to students on all work produced. Creative and design skills are developed through design and project work. These activities develop the abilities listed in B6-B9.

Assessment

Formal examinations are used to assess intellectual abilities. Assessed coursework provides further opportunities to demonstrate intellect and ability. The project, which is assessed by dissertation and, for selected students, viva voce examination, provides final evidence of the levels attained.

D Key (transferable) skills

A successful student will be able to:

D1 Manipulation and presentation of data in a variety of ways;

D2 Use of scientific evidence based methods in the solution of problems;

D3 Use of general IT skills;

D4 Use of creativity and innovation in problem solving;

D5 Working with limited or contradictory information;

D6 Effective communication;

D7 Engineering approach to the solution of problems;

D8 Time and resource management.

Teaching/learning methods and strategies:

The transferable skills associated with (D5, D6, D9) are developed in project-based coursework. All the other transferable skills are covered in a dedicated module on research skills.

Assessment

The skills associated with D1-D3 are assessed through formal examination. Those with D5, D6, D9 and D10 are assessed through coursework. Information retrieval and oral presentation test the skills of D4 and D7. Quantitative IT skills are assessed with D1-D3.

The above Learning Outcomes have been compared with the QAA Framework for Higher Education Qualifications Descriptor for a qualification at Masters (M) level. They are believed to meet or exceed the requirements of that Descriptor.

11 Programme Features, Structure and Curriculum

A Programme Features

The duration of all the MSc courses is normally one full calendar year. The taught modules are completed in the first and second semesters. The first semester comprises twelve teaching weeks, followed by a three-week break in teaching and then a two-week assessment period. It is immediately followed by the second semester that comprises twelve teaching weeks followed by a four week assessment period. There is a four-week break in teaching in semester two starting at the end of the eighth teaching week.

B Programme Structure

Every student studies 180 credits of taught modules over the 12 month period. The taught courses, comprising 10 modules worth 10 credits apiece, are delivered in Semesters 1 and 2. Students work on their projects, worth 80 credits, throughout the year. After the end of the second semester all their time is devoted to working on their projects and writing up their dissertations.

Some students, subject to approval by the Course Director, study for an MSc over two years. In the first year they study the subjects listed under the Certificate Regulations (published separately). In the second year they follow one of the programmes listed below.

C Programme Curriculum

Degree of Master of Science in Marine Electrical Power Technology
Course code: 9802

Candidates take a selection of compulsory and optional modules to a total value of 180 credits over three semesters.

They take the following compulsory modules:

Code	Credits	Descriptive title
MAR801	(10)	Research Skills
MAR817	(10)	Marine Electro-Technology
MAR831	(5)	Marine Electrical Power Systems
MAR835	(5)	Marine Electric Propulsion
MAR843	(10)	Ship Propulsion
MAR806	(10)	Data Analysis and Interpretation
MAR898	(80)	Dissertation

Candidates also select an approved combination of further modules to a total value of 50 credits from the options listed below. One approved subject listed as a Final Honours Undergraduate module may be taken.

Code	Credits	Descriptive title
MAR838	(5)	Performance Monitoring Systems
MAR826	(20)	Marine Machinery Systems

MAR827	(10)	Marine Transmission Systems
MAR854	(10)	Offshore Marine Applications
EEE808	(15)	Distributed Control Systems
EEE819	(15)	Electric Drives
MMM805	(15)	Sensors and Actuators
MMM449	(10)	Thermal Power & Propulsion Systems
ENM830	(5)	Non-Linear Ordinary Differential Equations I
ENM831	(5)	Non-Linear Ordinary Differential Equations II

Candidates who fail to satisfy the examiners for the award of the degree of Master of Science may be recommended by the examiners for the award of a Postgraduate Diploma. This award may be in Marine Electrical Power Technology or in Marine Technology at the discretion of the Board of Examiners, who will take into account performance in the dissertation together with the examination results.

This degree may be studied over 2 years by incorporating the MSc Preliminary Year programme offered by the Department of Marine Technology, and for which separate regulations are published.

Degree of Master of Science in Marine Engineering

Course code: 9276

Candidates take the following compulsory modules:

Code	Credits	Descriptive title
MAR801	(10)	Research Skills
MAR826	(20)	Marine Machinery Systems
MAR827	(10)	Marine Transmission Systems
MAR842	(10)	Ship Performance at Sea
MAR843	(10)	Ship Propulsion
MAR898	(80)	Dissertation

Candidates also select an approved combination of further modules to a total value of 40 credits from the options listed below. One approved subject listed as a Final Honours Undergraduate module may be taken.

Code	Credits	Descriptive title
MAR806	(10)	Data Analysis & Interpretation
MAR840	(10)	Marine Transport & Economics
MAR817	(10)	Marine Electro-Technology
MAR831	(5)	Marine Electrical Power Systems
MAR835	(5)	Marine Electric Propulsion
MAR838	(5)	Performance Monitoring Systems
MMM449	(10)	Thermal Power & Propulsive Systems
MMM804	(15)	Mechatronics
MMM805	(15)	Sensors and Actuators
MMM803	(10)	Corrosion & Corrosion Control
EEE808	(15)	Distributed Control Systems

Plus a 5-credit module from Engineering Mathematics approved by the Degree Programme Director.

Candidates who fail to satisfy the examiners for the award of the degree of Master of Science may be recommended by the examiners for the award of a Postgraduate Diploma. This award may be in Marine Engineering or in Marine Technology at the discretion of the Board of Examiners, who will take into account performance in the dissertation together with the examination results. This degree may be studied over 2 years by incorporating the MSc Preliminary Year programme offered by the Department of Marine Technology, and for which separate regulations are published.

Degree of Master of Science in Marine and Offshore Power Systems
Course code: 9803

Candidates take a selection of compulsory and optional modules to a total value of 180 credits over three semesters.

Candidates take the following compulsory modules:

Code	Credits	Descriptive title
MAR801	(10)	Research Skills
MAR826	(20)	Marine Machinery Systems
MAR831	(5)	Marine Electrical Power Systems
MAR838	(5)	Performance Monitoring Systems
MAR853	(10)	Structures and Vehicles Offshore
MAR855	(10)	Advanced Offshore Design
MAR827	(10)	Marine Transmission Systems
or		
MAR817	(10)	Marine Electro-Technology
MAR898	(80)	Dissertation

Candidates also select an approved combination of further modules to a total value of 30 credits from the options listed below. One approved subject listed as a Final Honours Undergraduate module may be taken.

Code	Credits	Descriptive title
MAR811	(10)	Dynamics of Offshore Installations
MAR854	(10)	Offshore Engineering Applications
MAR817	(10)	Marine Electro-Technology
or		
MAR827	(10)	Marine Transmission Systems
MAR842	(10)	Ship Performance at Sea
MAR843	(10)	Ship Propulsion
MAR806	(10)	Data Analysis & Interpretation
MMM449	(10)	Thermal Power & Propulsion Systems
MMM803	(10)	Corrosion & Corrosion Control

Plus a 5-credit module from Engineering Mathematics approved by the Degree Programme Director.

Candidates who fail to satisfy the examiners for the award of the degree of Master of Science may be recommended by the examiners for the award of a Postgraduate Diploma. This award may be in Marine and Offshore Power Systems or in Marine Technology at the discretion of the Board of Examiners, who will take into account performance in the dissertation together with the examination results. This degree may be studied over 2 years by incorporating the MSc Preliminary Year programme offered by the Department of Marine Technology, and for which separate regulations are published.

Degree of Master of Science in Marine Structures and Integrity

Course code: 9804

Candidates take a selection of compulsory and optional modules to a total value of 180 credits over three semester.

Candidates shall take the following compulsory modules:

Code	Credits	Descriptive title
MAR801	(10)	Research Skills
MAR845	(10)	Structural Response Analysis
MAR846	(10)	Structural Design Synthesis - Ships
MAR811	(10)	Dynamics of Offshore Installations
MAR898	(80)	Dissertation

(b) Candidates shall select an approved combination of further modules to a total value of 60 credits from the options listed below. One approved subject listed as a Final Honours Undergraduate module may be taken.

Code	Credits	Descriptive title
MAR807	(10)	Marine Production Technology
MAR809	(15)	Fundamentals of Pipeline Engineering
MAR810	(15)	Pipeline Structural Analysis
CIV433	(10)	Finite Element Theory
CIV435	(10)	Structural Dynamics
CIV436	(10)	Structural Design C
MMM446/466	(15)	Stress Analysis & Fracture Mechanics A & B
MMM803	(10)	Corrosion and Corrosion Control
MMM372	(10)	Reliability and Lifetime Prediction
MMM373	(10)	Joining Technology

Candidates who fail to satisfy the examiners for the award of the degree of Master of Science may be recommended by the examiners for the award of a Postgraduate Diploma. This award may be in Marine Structures and Integrity or in Marine Technology at the discretion of the Board of Examiners, who will take into account performance in the dissertation together with the examination results.

This degree may be studied over 2 years by incorporating the MSc Preliminary Year programme offered by the Department of Marine Technology, and for which separate regulations are published.

Degree of Master of Science in Marine Technology
Course code: 9277

Candidates shall take a selection of compulsory and optional modules to a total value of 180 credits over three semesters.

Candidates take the following compulsory modules:

Code	*Credits*	*Descriptive title*
MAR801	(10)	Research Skills
MAR898	(80)	Dissertation

Candidates select an approved combination of further modules to a total value of 90 credits from the options listed in the regulations for the Degrees of Master of Science in Marine Engineering, Naval Architecture, Offshore Engineering, Marine Structures and Integrity, Marine Electrical Power Technology, Marine and Offshore Power Systems, Pipeline Engineering, and Offshore and Environmental Technology. A minimum of 60 credits must be selected from modules offered by the Department of Marine Technology (indicated by the prefix letters MAR). One approved subject listed as a Final Honours Undergraduate module may be taken.

Candidates who fail to satisfy the examiners for the award of the degree of Master of Science may be recommended by the examiners for the award of a Postgraduate Diploma in Marine Technology. This degree may be studied over 2 years by incorporating the MSc Preliminary Year programme offered by the Department of Marine Technology, and for which separate regulations are published.

Degree of Master of Science in Transport and Business Management
Course code: 9301

The programme of study begins annually in September and candidates shall take modules to a total value of 180 credits over three semesters.

Candidates shall take the following compulsory modules:

Code	*Credits*	*Descriptive title*
CIV830	(10)	Research Methods (Transport)
CIV898	(90)	Dissertation

(b) Candidates shall select modules to a value of 40 credits from the following, subject to availability and the approval of the Degree Programme Director.

Code	*Credits*	*Descriptive title*
NSM801	(10)	International Business Management
NSM802	(10)	Managing Across Cultures
NSM803	(10)	Marketing
NSM804	(10)	Financial Reporting for Managers
NSM806	(10)	Managing People and Change in Organizations
NSM807	(10)	Accounting for Decision-making and Control

NSM810 (10)	Entrepreneurship and Enterprise
NSM848 (10)	International Human Resource Management

plus another NSM module (10 credits) approved by the Degree Programme Director.
(c) Candidates shall select modules to a value of 40 credits from the following, subject to availability and the approval of the Degree Programme Director.

Code	*Credits*	*Descriptive title*
CIV806	(10)	Freight Transport Planning and Management
CIV807	(10)	Project Management
CIV810	(10)	Intelligent Transport Systems
CIV838	(10)	Railway Management, Economics and Planning
CIV839	(10)	Managing Travel Behaviour
CIV841	(10)	Traffic Management Techniques
CIV842	(10)	Characteristics of Passenger Transport Systems
CIV843	(10)	Transport Management and Operations
CIV845	(10)	Travel Demand Forecasting
CIV846	(10)	Evaluation of Transport Schemes
CIV847	(10)	Transport Safety
CIV848	(10)	Transport and the Environment
CIV850	(10)	Management of Urban Transport in Developing Countries
CIV941	(10)	Principles of Telematics Engineering

plus another module with a value of 10 credits approved by the Degree Programme Director.

Degree of Master of Science in Naval Architecture
Course code: 9805

Candidates take a selection of compulsory and optional modules to a total value of 180 credits over three semesters.

Candidates take the following compulsory modules:

Code	Credits	Descriptive title
MAR801	(10)	Research Skills
MAR842	(10)	Ship Performance at Sea
MAR843	(10)	Ship Propulsion
MAR846	(10)	Structural Design Synthesis – Ships
MAR840	(10)	Marine Transport and Economics
MAR807	(10)	Marine Production Technology
or		
MAR856	(10)	Marine Management Technology
MAR898	(80)	Dissertation

Candidates also select an approved combination of further modules to a total value of 40 credits from the options listed below. One approved subject listed as a Final Honours Undergraduate

module may be taken.

Code	Credits	Descriptive title
MAR841	(10)	Design & Analysis of Marine Transport Systems
MAR845	(10)	Structural Response Analysis
MAR852	(10)	Optimal Marine Design
MAR853	(10)	Structures and Vehicles Offshore
MAR854	(10)	Offshore Engineering Applications
MAR839	(10)	Advanced Hydrodynamics
MAR838	(5)	Performance Monitoring Systems
MAR856	(10)	Marine Management Technology
or		
MAR807	(10)	Marine Production Technology

Plus a 5-credit module from Engineering Mathematics approved by the Degree Programme Director.

Candidates who fail to satisfy the examiners for the award of the degree of Master of Science may be recommended by the examiners for the award of a Postgraduate Diploma. This award may be in Naval Architecture or in Marine Technology at the discretion of the Board of Examiners, who will take into account performance in the dissertation together with the examination results. This degree may be studied over 2 years by incorporating the MSc Preliminary Year programme offered by the Department of Marine Technology, and for which separate regulations are published.

Degree of Master of Science in Offshore Engineering

Course code: 9283

Candidates take a selection of compulsory and optional modules to a total value of 180 credits over three semesters.

Candidates take the following compulsory modules:

Code	*Credits*	*Descriptive title*
MAR801	(10)	Research Skills
MAR853	(10)	Structures and Vehicles Offshore
MAR854	(10)	Offshore Engineering Applications
MAR829	(20)	Fluid Structure Interaction
MAR855	(10)	Advanced Offshore Design
MAR847	(10)	Structural Design Synthesis - Offshore
MAR845	(10)	Structural Response Analysis
MAR898	(80)	Dissertation

Candidates also select an approved combination of further modules to a total value of 20 credits from the options listed below. One approved subject listed as a Final Honours Undergraduate module may be taken.

Code	Credits	Descriptive title
MAR809	(15)	Fundamentals of Pipeline Engineering

MAR810	(15)	Pipeline Structural Analysis
MAR807	(10)	Marine Production Technology
or		
MAR856	(10)	Marine Management Technology
CIV433	(10)	Finite Element Theory
CIV435	(10)	Structural Dynamics
CIV436	(10)	Structural Design C
MMM446/466	(15)	Stress Analysis and Fracture Mechanics A & B
MMM803	(10)	Corrosion and Corrosion Control

Plus a 5-credit module from Engineering Mathematics approved by the Degree Programme Director.

Candidates who fail to satisfy the examiners for the award of the degree of Master of Science may be recommended by the examiners for the award of a Postgraduate Diploma. This award may be in Offshore Engineering or in Marine Technology at the discretion of the Board of Examiners, who will take into account performance in the dissertation together with the examination results. This degree may be studied over 2 years by incorporating the MSc Preliminary Year programme offered by the Department of Marine Technology, and for which separate regulations are published.

Degree of Master of Science in Pipeline Engineering
Course code: 9350 (including Preliminary Year: 9315)

The full-time programme of study begins annually at the start of Semester 1. The programme may also be taken on a part-time basis.

Candidates take modules to a total value of 180 credits over three semesters the following compulsory modules:

Code	*Credits*	*Descriptive title*
CPE832	(10)	Safety, Risk and Management Environmental
CPE833	(10)	Hydrocarbon Production and Process Engineering
CIV804	(10)	Civil and Geotechnical Aspects of Pipeline Engineering
ECO324	(10)	Economics for Engineers
MAR809	(15)	Fundamentals of Pipeline Engineering
MAR810	(15)	Pipeline Structural Analysis
MAR811	(10)	Dynamics of Offshore Installations
MAR812	(10)	Design and Construction
MAR813	(10)	Asset Management
MMM802	(10)	Materials and Fabrication
MMM803	(10)	Corrosion and Corrosion Control
MAR897	(60)	Project

Candidates who fail to satisfy the examiners for the award of the degree of Master of Science may be recommended by the examiners for the award of a Postgraduate Diploma. This degree may be studied over two years by incorporating the MSc Preliminary Year programme offered by the Department of Marine Technology, and for which separate regulations are published separately.

Development of specific Intended Learning Outcomes occurs through the following modules (compulsory modules in bold text, optional modules in normal, italic text). NB Compulsory modules specified in one

discipline may be taken as optional modules in one of the other disciplines in which they are not compulsory.

A1	Mathematics and physics appropriate to marine technology and related fields.	**MAR801, MAR806**, *ENM330/830, ENM331/831,CIV433*
A2	Detailed knowledge and understanding of facts, concepts, principles and theories relevant to the student's chosen area of specialisation within Marine Technology.	**MAR807, MAR809, MAR810, MAR811, MAR812, MAR813, MAR817, MAR 826, MAR829, MAR831, MAR835, MAR838, MAR840, MAR841, MAR842, MAR843, MAR845, MAR846, MAR847, MAR853, MAR854, MAR855, MAR856, MAR861, MAR865, MAR866, CIV804, CPE832, CPE833, NSM804**
A3	Knowledge of IT applications to the selected fields of study.	**MAR801, MAR806, CIV433**
A4	Conceptual and detailed design of artefacts appropriate to their area of specialisation.	**MAR 812, MAR855, MAR846, MAR847, MAR852, MAR855**
A5	Where appropriate, management principles and business practices, including professional and ethical responsibilities	*MAR 315*, **MAR801, MAR813, MAR856, ECO324,** *LAW310, NSM801*, **NSM804,** *NSM807,*
A6	The role of marine technologists in society and the constraints within which their engineering judgement will be exercised.	***MAR315*, MAR856, MAR865, CPE832, *LAW820***
A7	Production practice including codes of practice and regulatory framework.	**MAR807, MAR846, MAR847, MAR855, MAR856,** *MMM372, MMM373,*
A8	The assessment of safety risks, and the legislative framework for safety.	**MAR865, CPE832, *LAW820,*** *MMM372,*
B1	Use appropriate mathematical methods for modelling and analysing problems in marine technology.	**MAR809, MAR810, MAR811, MAR817, MAR 826, MAR829, MAR831, MAR835, MAR 839, MAR840, MAR841, MAR842, MAR843, MAR845, MAR852, MAR854, MAR855, MAR861, CIV804, MMM446, NSM804**
B2	Select appropriate experimental set-up and procedures.	**MAR806, MAR842**
B3	Carry out experimental laboratory work in a professional manner	**MAR806**
B4	Write computer software and use it, or commercial packages, for appropriate tasks.	**MAR811, MAR900**
B5	Design a system, component or process in selected fields.	**MAR841, MAR846, MAR847, MAR852, MAR855,**
B6	Test design ideas practically through laboratory work or simulation with technical analysis and to evaluate the results critically.	**MAR806, MAR826**
B7	Search for information for the further development of ideas	**MAR801, MAR898**
B8	Apply engineering techniques taking account of industrial and commercial constraints.	**MAR898**
B9	Manage projects effectively.	**MAR801, MAR898**
C1	Select and apply appropriate mathematical methods for modelling and analysing relevant problems.	**MAR898**

C2	Use scientific principles in the development of engineering solutions to practical problems.	**MAR801, MAR 805, MAR806, MAR898**
C3	Use scientific principles in the modelling and analysis of engineering systems, processes and products.	**MAR898**
C4	To select and apply appropriate computer based methods for modelling and analysing problems in selected fields.	**MAR841, MAR846, MAR847, MAR852, MAR855, MAR898**
C5	Be creative in the solution of problems and in the development of designs.	**MAR854, MAR898**
C6	Integrate and evaluate information and data from a variety of sources.	**MAR801, MAR854, MAR898**
C7	Take an holistic approach to solving problems and designing systems, applying professional judgements to balance risks, costs, benefits, safety, reliability, aesthetics and environmental impact.	**MAR841, MAR846, MAR847, MAR852, MAR855**, **MAR898**
D1	Manipulation and presentation of data in a variety of ways.	**MAR801, MAR805, MAR898**
D2	Use of scientific evidence based methods in the solution of problems.	**MAR801, MAR898**
D3	Use of general IT skills.	**MAR801, MAR846, MAR847, MAR852, MAR855,**
D4	Use of creativity and innovation in problem solving.	**MAR854, MAR898**
D5	Working with limited or contradictory information.	**MAR805, MAR898**
D6	Effective communication.	**MAR801, MAR854**
D7	Engineering approach to the solution of problems.	**MAR841, MAR846, MAR847, MAR852, MAR855,**
D8	Time and resource management.	**MAR801, MAR898**

12 Criteria for Admission:

Students wishing to be accepted on to the M.Sc. course should normally have a good (2nd class Honours or better) first (Bachelor) degree, or equivalent, in a relevant science or engineering subject from a recognised institution of high academic standing.

Arrangements for non-standard entrants

Engineering requires a wide range of attributes and abilities, and so selection is not always based solely on academic grades. Selectors seek evidence of motivation and commitment from the Personal Statement and Reference sections on application forms. The School welcomes mature students and recognises, and gives credit for, the fact that they often have non-standard qualifications that are compensated for by experience. Prospective students are encouraged to attend for interview whenever possible.

12 Support for Students and their Learning:

The most important resource for the support for students and their learning is the academic staff. At the beginning of the course, every student is allocated a Personal Tutor whose purpose is to help students deal with any pastoral or academic problems they may encounter. Further details of this system are explained in the course handbook given to every student during their induction (see below) to the school and university.

In addition to the normal facilities provided to every student by the university, the school offers a unique set of facilities in the form of: its own technical library, run by the school Information Officer; its own computer clusters supporting specialist marine orientated software; a unique range of laboratory facilities including a towing tank, a combined wind/wave/current facility, a cavitation tunnel, a marine engine testing laboratory; and, facilities such as aquaria, the Dove Marine Laboratory and a research vessel supporting the marine science activities of the school. These are also described in more detail in the course handbook.

The university's general support for students and their learning experience includes the following:

Induction
The first week of the first term/semester is an Induction Week with no formal teaching. During this period all students will be given detailed programme information relating to their Stage and the timetable of lectures/practicals/labs/ tutorials/etc. In particular all new students will be given general information about the School and their course, as described in the Degree Programme Handbook. The International Office offers an additional induction programme for overseas students (see http://www.ncl.ac.uk/international/coming_to_newcastle/orientation.phtml).

Study skills support
Students will learn a range of Personal Transferable Skills, including Study Skills, as outlined in the Programme Specification.

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 Student Counselling Service, the Mature Student Support Service, and a Childcare Support Officer, see http://www.ncl.ac.uk/undergraduate/support/welfare.phtml.

Support for Special Needs
Support for students with special needs is provided as required and the University's Disability Support Service can be consulted where appropriate. For further details see http://www.ncl.ac.uk/undergraduate/support/disability.phtml.

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/support/acfacilities.phtml.
All new students whose first language is not English are required to take an English Language test in the Language Centre. Where appropriate, in-sessional language training can be provided. The Language Centre houses a range of resources for learning other languages which may be particularly appropriate for those interested in an Erasmus exchanges. See http://www.ncl.ac.uk/undergraduate/support/langcen.phtml.

14 Methods for Evaluating and Improving the Quality and standards of Teaching and Learning:

The school follows the normal university practices and procedures for monitoring, evaluating and improving its quality and standards of teaching and learning. These include:

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 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 under Reserved Business, in the absence of the student representatives. The Board responds to these reports through Faculty Teaching and Learning Committee.

Accreditation reports

This programme is not accredited by any professional body.

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.

Feedback mechanisms
Feedback to students is effected 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 programme, see http://www.ncl.ac.uk/internal/academic-quality/qualityhome.htm#2.

15 Regulation of Assessment:

Pass Marks

The pass mark, as defined in the University's Postgraduate Examination Conventions is 50.

Course Requirements

Progression is subject to the University's Postgraduate Progress Regulations and Postgraduate Examination Conventions. In summary, students are expected pass 180 credits

Common Marking Scheme

A Master's degree shall be awarded to a candidate who has made satisfactory progress and who has satisfied the board of examiners in the assessments for the degree programme as a whole, in accordance with university regulations.

The University employs a common marking scheme, which is specified in the Postgraduate Examination Conventions, and in which a Master's degree may be awarded with Merit or with Distinction; namely

<50	Fail
50-59	Pass
60-69	Pass with Merit
70+	Pass with Distinction

This common scale for the return of marks is also applicable to postgraduate certificates and postgraduate diplomas.

The marks are awarded on the following basis:

Award	**Mark Range**	**Descriptive Equivalent**
Pass with Distinction	90 – 100	An outstanding piece of work throughout with excellent analysis, synthesis and evaluation of material and concise, logical thought. Where appropriate, work shows originality and critical ability. Demonstrates comprehensive understanding of topic with evidence of substantial] additional study and with virtually no errors. Extremely well presented and structured work. Could not be bettered at this level in the time available.
	80 - 89	Outstanding in most elements but minor deficiencies in some, compensated by excellence in others. Extremely well presented and structured work.
	70 - 79	Overall excellent with respect to synthesis, originality, critical ability and logical argument. Thorough understanding of the topic and evidence of significant additional study, although may contain minor errors. Extremely well presented and structured work.
Pass with Merit	65 - 69	Shows thorough understanding of topic. Substantial detail supported by reasoned argument, application and critical analysis, with evidence of further study. Very well presented and structured work.

	60 - 64	Work provides substantial information that addresses the aims and objectives of the module/topic. May contain minor errors of understanding Some evidence of additional study. Very well resented and structured work.
Pass	50-59	Clear understanding of the topic. Material included is relevant and largely factually correct, but lacking in critical analysis and in evidence of further study. May contain errors of understanding or facts in some areas compensated by very good work in other areas. Relies almost entirely on course material. Adequately presented and structured.
	50 - 54	Limited understanding of material. Considerable omission of relevant material and/or use of irrelevant material. May contain significant errors of understanding and some errors of fact. Presentation and structure adequate to poor.
Fail Compensation Range	45 – 49	Very limited understanding of material. Significant omissions, errors of understanding and factual errors. Generally poorly presented and structured.
	40 - 44	Demonstrates minimum acceptable understanding in some though not all areas. Many factual errors and omissions Generally poorly presented and structured.

Role of the External Examiners

External Examiners, distinguished membersof the subject community, are appointed by Faculty Teaaching and Learning Committee, after recommendation from the Board of Studies. The External Examiners are expected to:

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

16 Indicators of Quality and Standards:

Professional Accreditation Reports: Not applicable

Internal Review Reports:

This programme was covered by the Internal Subject Review of the Interdisciplinary MSc Programme held on Aug 2004 and was subsequently approved by Faculty Teaching and Learning Committee and University Teaching and Learning Committee.

Previous QAA Reports

This programme was not part of the last QAA

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.

17 Other Sources of Information:

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

The Departmental Prospectus (see http://www.ncl.ac.uk/postgraduate/taught/subjects/martech)

The University and Degree Programme Regulations (see http://www.ncl.ac.uk/calendar/pdf/uniregs.pdf and http://www.ncl.ac.uk/calendar/sae/)

The Degree Programme Handbook