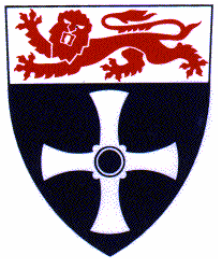
UNIVERSITY
OF
NEWCASTLE UPON TYNE



DEGREE PROGRAMME SPECIFICATION

1.Awarding Institution:	University of Newcastle upon Tyne
2.Teaching Institution:	University of Newcastle upon Tyne
3.Programmes Accredited by:	Not applicable
4.Final Award:	MRes.
5.Programme Titles:	Technology in the Marine Environment
6.UCAS codes:	Not applicable
7.QAA Benchmarking Group	Not applicable
8. Date of production / revision	March 2002/August 2004

9.**Educational Aims of the Programme**

Degree Programme Aims

The course is designed for highflying graduates from a range of disciplines intending to play a high profile role in project management and research in the field of Marine Technology. The course is generic in nature and a large part of it will be appropriate to many other sectors of industry.

It is intended that the course will provide a firm basis for the professional development of graduates intending to follow a career in industry by following one of two routes.

- The first is to complete the course, qualify with an MRes, and move from there into industry.

- The second route is to follow the MRes by a further period of research, in an area defined by experience and contacts established during the course, and leading to a doctorate.

It is envisaged that they would then move into industry to implement state of the art technology, tailored to industrial requirements, developed over the previous four years. Whilst the emphasis of the course is on the former route, experience of the Department in collaboration with industry has shown the second route to be a very effective vehicle for technology transfer for carefully targeted projects.

Degree Programme Objectives

The course aims to provide its students with the basic skills and knowledge of the tools required to carry out a research project in an industrial context. In order to achieve this objective it is necessary for them to understand the environment in which they will operate, and to appreciate the techniques that will enable them to do so effectively. They will learn:

- the basic tools for managing any project;
- to study the specialised techniques for undertaking projects with a strong research bias;
- to analyse and define the objectives of a project;
- to design and to plan it according to rational methodologies;
- to carry it out in accordance with practicable and efficient procedures;
- to analyse and interpret the results and to present them in a meaningful manner.

During the course they will participate in project work that, in addition to achieving certain technical and educational objectives, will be designed to develop interpersonal and transferable skills.

10. Programme Outcomes

The programme comprises four main elements; Research Techniques, Advanced Knowledge, Advanced Skills, and Transferable and Personal Skills. It is designed to provide opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas. The codes in parentheses following the programme outcomes refer to the QAA benchmark statements for Engineering. The typical (modal) student will have:

A. Knowledge & Understanding

1. Mathematics and physics appropriate to marine technology and related fields (A1);
2. Detailed knowledge and understanding of facts, concepts, principles and theories relevant to the student's chosen area of specialisation within Marine Technology (A2);
3. Knowledge of IT applications to the selected fields of study (A3);
4. Conceptual and detailed design of artefacts appropriate to their area of specialisation (A4, A5);
5. Where appropriate, management principles and business practices, including professional and ethical responsibilities (A6);
6. The role of marine technologists in society and the constraints within which their engineering judgement will be exercised (A7);
7. Production practice including codes of practice and regulatory framework (A8, A9);
8. The assessment of safety risks, and the legislative framework for safety (A10).

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 learner 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 viva voce examination.

B. Intellectual Abilities

The course is designed to develop the intellectual abilities of the students to:

1. Select and apply appropriate mathematical methods for modelling and analysing relevant problems (B1);
2. Use scientific principles in the development of engineering solutions to practical problems (B2);
3. Use scientific principles in the modelling and analysis of engineering systems, processes and products (B3);
4. To select and apply appropriate computer based methods for modelling and analysing problems in selected fields (B4);
5. Be creative in the solution of problems and in the development of designs (B5);
6. Integrate and evaluate information and data from a variety of sources (B6);
7. Take an holistic approach to solving problems and designing systems, applying professional judgements to balance risks, costs, benefits, safety, reliability, aesthetics and environmental impact (B7-B9).

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

C. Practical Skills

The course is designed to develop the practical skills of the students to:

1. Use appropriate mathematical methods for modelling and analysing problems in marine technology (C1);
2. Select appropriate experimental set-up and procedures (C2);
3. Carry out experimental laboratory work in a professional manner (C3);
4. Write computer software and use it, or commercial packages, for appropriate tasks (C4);
5. Design a system, component or process in selected fields (C5);
6. Test design ideas practically through laboratory work or simulation with technical analysis and to evaluate the results critically (C6);

7. Search for information for the further development of ideas (C7);
8. Apply engineering techniques taking account of industrial and commercial constraints (C8);
9. Manage projects effectively (C9).

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.

D. General Transferable Skills

The course is designed to develop the students' transferable skills in the;

1. Manipulation and presentation of data in a variety of ways (D1, D2);
2. Use of scientific evidence based methods in the solution of problems (D3);
3. Use of general IT skills (D4);
4. Use of creativity and innovation in problem solving (D5);
5. Working with limited or contradictory information (D6);
6. Effective communication (D7);
7. Engineering approach to the solution of problems (D9)
8. Time and resource management (D10).

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 meet the QAA Framework for Higher Education Qualifications Descriptor for a qualification at Masters (M) level.

11. Programme structures: credits, modules, levels and awards.

The one-year course is a modular one integrated with the university semester system but continuing for a period of a further three months beyond the end of the second semester. The course has a component involving formally taught modules and a component in which students exercise and develop the skills they have acquired in carrying out a research project. The course comprises twenty modules in all. Eight of them are taught and the remaining twelve are devoted to the research project. Six modules will normally be taught in the first semester and two in the second, depending on choice of optional modules. The research project will start in the second semester.

The Research Project, which receives a weighting of twelve modules, lasts throughout the calendar year, beginning in earnest at the beginning of the second semester. It is carried out in collaboration with an industrial partner who, along with the academic supervisor, participates in the definition of the project specification and the supervision of the project.

The structure of the course differs from conventional MEng and MPhil courses, or the first year of a PhD course, in that the taught part explicitly comprises four components that might be described under the headings Research Techniques, Advanced Knowledge, Advanced Skills, and Transferable and Personal Skills. This structure conforms to the original EPSRC guidelines on developing MRes courses. The module options offered are designed to take into account student aspirations (whether they wish to continue to study for a PhD, or enter directly into industry) and the subject area of their research project.

Students normally take the following compulsory modules;

Code	*Credits*	*Descriptive title*
MAR871	(20)	Research Skills
MAR872	(10)	Management and Communication
MAR805	(10)	Design and Implementation of Experiments
MAR806	(10)	Data Analysis and Interpretation

All candidates then choose modules to the value of 30 credits from the following**:**

Code	*Credits*	*Descriptive title*
MAR803	(10)	Quantitative Decision Support in System Synthesis and Selection
MAR804	(10)	Quality Assurance and Product Liability
MAR807	(10)	Marine Production Technology
MAR808	(10)	Engineering Mathematics
MAR332	(5)	Formal Safety Assessment & Design for Safety
CPE440	(5)	Cleaner Technology
CPE840	(5)	Process Control for Environmental Improvement
CPE842	(5)	Sustainable Engineering
CPE816	(10)	Pollution Monitoring
CPE818	(10)	Business and Environmental Management
CPE829	(5)	Energy Management
CIV819	(10)	Management of Hazardous & Industrial Waste
EOM801	(5)	Occupational and Environmental Monitoring
LAW820	(5)	Environmental Law
TCP846	(10)	Environmental Impact Assessment

In addition to the taught modules, all students carry out a research project. The research element of the course spans a complete calendar year, although substantial work on the research project does not start until the beginning of the second semester.

Having selected an area he, or she, wishes to work in and carried out an exploratory literature search in the first semester, the student chooses an Academic Supervisor, and with the help of the Department, establishes an Industrial Collaborator.

The student then undertakes the main body of the project liasing regularly with the Industrial Collaborator as and when agreed by the two of them. From the end of the second semester (early June) until the end of the academic year (end of September) the student works full time on his project. At the end of this period he, or she, presents a dissertation that is assessed by the Supervisor and another Examiner. In addition the student and is examined viva voce by the External Examiner.

12. Support for Students

Services and facilities available to students include the following:

- Personal Tutor;
- Degree Programme Director;
- Departmental Information Officer
- Departmental Student/staff ratio of 16:1
- Induction activities for Masters students;
- Study skills advice in Handbook, University Web based materials and Personal Tutor;
- Library visits and instruction;
- Degree Programme Handbook (including Degree Regulations and Module sheets);
- Departmental Student Handbook;
- University Computing Service facilities (including extensive PC and UNIX provision, software applications, e-mail and internet access);
- University (Robinson) Library, including search facilities and inter-library loans;
- Marine Technology Library (including Departmental tutorial solutions and other support materials);
- Extensive laboratories;
- University Housing Office (which makes an offer of University accommodation to each first year student);
- University Careers Service;
- Departmental Careers Fair;
- University Counselling Service;
- University Language Centre;
- Students' Union services, including societies, refectories and Student Advice Centre;
- Centre for Physical Recreation and Sport;
- Student Progress Office;
- International Office;
- Faculty Financial Support.

- University Chaplaincy;
- Saville Medical Practice.

(Ref: Newcastle University and You: http://www.ncl.ac.uk/services/welfare/nu.and.you/
University Student Handbook 2001;
Student Welfare Handbook http://www.ncl.ac.uk/services/welfare/whb /
University Student Handbook International Supplement 2001;
International Students' Handbook
Destination Newcastle 2001;
Student Accommodation 2001/2002 http://www.ncl.ac.uk/services/accom/
the Careers Service Guide 2001;
UCS: http://www.ncl.ac.uk/ucs/
The Language Centre http://www.ncl.ac.uk/langcen/
Newcastle University Library http://www.ncl.ac.uk/library
Tutor's Handbook: http://www.ncl.ac.uk/internal/thb)

13. Criteria for Admission

Students wishing to be accepted on to the MRes. course should normally have a good (II.1 Honours or better) first (Bachelor) degree, or equivalent, in a relevant science or engineering subject from a recognised institution of high academic standing.

14. Methods of evaluating and improving the quality and standards of teaching learning and assessment

Mechanisms for review

- Subject review
- Taught Programme Review)
- Module Review (including University Questionnaire Service returns)
- Stage Review Meetings (including Stage questionnaires for each Semester)
- Annual Revision of Regulations
- Annual Revision of Module Sheets
- Accreditation Reports
- HEFCE/QAA Reports
- External Examiners' Reports to VC

Committees with responsibilities for quality and standards

- University Teaching Committee
- Faculty Teaching Committee
- Faculty Policy & Resources Committee (for resource issues)
- Board of Studies
- Departmental Teaching Committee
- Departmental Policy & Resources Committee (for resource issues)

14. Methods of evaluating and improving the quality and standards of teaching learning and assessment (continued)

- Departmental Staff/Student Committee
- Board of Examiners
- Mechanisms for student feedback
- University Questionnaire Service returns
- Postgraduate student representation on Board of Studies
- University Staff/Student Committee
- Postgraduate student representation on University Teaching Committee
- Personal Tutors

(The following internal documentation is maintained:

: Preparing for Subject Review
: Guidelines for Taught Programme Review 1999
: Module Files
: DTC minutes
: Degree Programme Handbook
: HEFCE Quality Assessment Report 1999
: FTC Minutes
: FP&RC confidential Minutes, maintained by Faculty Asst. Registrar
: BoS. Minutes file
: Staff/Student Minutes file
: Exam. Board Minutes file

the nature of this documentation is such that most is not in the public domain.)

15. Regulation of Standards

Assessment rules

The Assessment rules are given in the "Taught Postgraduate Masters' Degree Entrance and Progress Regulations".

The minimum pass mark is normally 40%.
There is limited compensation for marks of 35-40%.
Distinctions are awarded for marks of 70% and more.

Role of the External Examiner

The External Examiners are involved in assessment of the course. Their duties will normally include:

- Approval of Examination Papers
- Vetting in-course assessments and examination scripts
- Interviewing candidates prior to the Final Examination Board
- Attending the Final Board and participating in its deliberations
- Reviewing any subsequent special cases, either by correspondence or in special circumstances by subsequent visits to Newcastle.
- Returning a confidential report to the VC.

(Ref: University Regulations,
Handbook for External Examiners of Undergraduate Examinations)

16.Indicators of Quality and Standards

Annual External Examiners' Reports (Departmental and FTC reviews)
Annual review of student destinations
Annual Module Review process reported to Board of Studies
Staff / Student Committee Minutes reviewed by Board of Studies
Annual FTC review of Faculty intake (by Department)
Annual FTC review of student feedback questionnaires recently initiated to be fully operative from 2000/2001
Biennial UTC "Taught Programme Review"
Quinquennial UTC "Subject Review"

(Ref: : Preparing for Subject Review
: Guidelines for Taught Programme Review 1999
: FTC Minutes
: FP&RC confidential Minutes, maintained by Faculty Asst. Registrar
: BoS. Minutes file
: University Careers Service reports: http://www.careers.ncl.ac.uk/academics
: Staff/Student Minutes file
: Exam. Board Minutes file)

Warning

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 if they take advantage of the opportunities provided. More detailed information on the specific learning outcomes, indicative content and teaching, learning and assessment can be found in the Degree Programme Handbook and other University documentation.

The information from this document may be selectively extracted and included in documents that are more appropriate for non-academic audiences, for example, students, intending students and employers.