**UNIVERSITY OF NEWCASTLE UPON TYNE**

**FACULTY OF SCIENCE, AGRICULTURE & ENGINEERING**

**DEGREE PROGRAMME SPECIFICATION**

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|---|---|---|
| **1.** | **Awarding Institution** | University of Newcastle upon Tyne |
| **2.** | **Teaching Institution** | University of Newcastle upon Tyne |
| **3.** | **Final Award** | Master of Science (including "with Distinction" option)<br>Postgraduate Diploma, Postgraduate Certificate, CPD |
| **4.** | **Programme Title** | Marine Technology (International ) |

**5. Programme Accredited by:**

The programme has been approved by the Ministry of Education in Singapore as meeting the appropriate Masters standards. In addition, professional accreditation of the modules and the postgraduate degree programmes will be sought jointly by the Institute of Marine Engineering, Science and Technology, the Royal Institution of Naval Architects, the Institute of Engineers, Singapore, and other relevant Asian professional organisations.

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| **6.** | **UCAS Code** | n/a (postgraduate programme) |
| **7.** | **QAA Benchmarking Group(s)** | n/a (postgraduate programme) |
| **8.** | **Date of production/revision** | September 2004, revision one |

**9. Programme Aims:**

The aim of this programme is to provide a high quality, postgraduate programme in the subject of Marine Technology for Singapore and the Asian region. The programme has been specifically designed to meet the needs of the Asian maritime market so that graduates have the necessary skills in advanced marine technologies for future development and improved efficiency in the industry.

The programme will provide the marine industry in the region with a Masters Training Package which will enable graduates working in industry to gain the necessary skills training in advanced technologies, management, business and IT. The training will be relevant to current problems and functions of the marine sector and will be designed to enhance the industry's knowledge base and improve competitiveness. This will provide students with enhanced technical and managerial techniques that can be applied in the marine industry and enable them to take on major responsibilities early in their careers.

This programme aims to be financially sustainable and, at the same time, aims to increase the profile of the University of Newcastle upon Tyne within Singapore and the Asian region. It would also be an aim of the programme, if successful, to "roll out" to other potentially significant markets such as China.

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

### 10(a) Programme Intended Learning Outcomes:

Knowledge and Understanding:

- Advanced technologies and technological developments within marine technology with particular relevance to the Singaporean and Asian maritime industry.

- Business applications of advanced marine technologies.

- Concepts of non-technical issues including economics, environmental issues, safety and legislation associated with marine technology.

- Project management systems and approaches.

Subject-specific/professional skills:

- Theoretical design concepts and practical implementation.

- Competence in a number of software programs used in the maritime industry.

- Project planning, project management and resource management skills with particular expertise in techniques and issues relevant to the maritime industry.

Cognitive Skills:

- Collation, analysis and evaluation of data.

- Problem formation and problem solving.

- Decision making ability in both theoretical and practical situations.

Key (transferable) Skills:

- Communication skills, for both technology based and non-technology based communication.

- Time management skills including meeting deadlines

- Understanding of the importance of team work and how to develop and manage a successful team work capability.

- Ability to work alone

| 10(b) | Intended Learning Outcomes | How are they taught? | How are students enabled to learn? |
|---|---|---|---|
| A | Knowledge and understanding | | |
| A1 | Advanced technologies and technological development | Lectures, seminars, tutorials, distance learning material | Design exercises<br>Independent reading<br>Work based application and assessment<br>Project and dissertation |

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|---|---|---|---|
| A2 | Business applications | Lectures, seminars, tutorials, distance learning material | Independent reading<br>Work based application and assessment<br>Case studies<br>Project and dissertation |
| A3 | Concepts of non technical issues | Lectures, seminars, tutorials, distance learning material | Independent reading<br>Work based application and assessment<br>Project and dissertation |
| B | Subject specific skills | | |
| B1 | Theoretical design concepts and practical implementation | Lectures, design exercises | Design exercises<br>Work based application and assessment<br>Project and dissertation |
| B2 | Competence in software programs | Lectures, design exercises | Use of web based system for distance learning<br>Design exercises<br>Work based application and assessment |
| B3 | Project planning, project and resource management | Lectures, seminars, distance learning material | Work based application and assessment<br>Design exercises<br>Project and dissertation |
| C | Cognitive Skills | | |
| C1 | Collation, analysis and evaluation of data | Design exercises, lectures, seminars | Design exercises<br>Work based application and assessment<br>Project and dissertation |
| C2 | Problem formulation and solving | Design exercises, seminars | Design exercises<br>Work based application and assessment<br>Project and dissertation |
| C3 | Decision making ability | Design exercises, seminars | Design exercises<br>Work based application and assessment |

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|---|---|---|---|
| D | Key (transferable) Skills | | |
| D1 | Communication skills | Seminars, project progress meetings | Design presentations<br>Work based assessments<br>Project and dissertation |
| D2 | Time management | Seminars, Study skills information in student handbook | Design exercises<br>Work based assessments<br>Distance learning pack<br>Project and dissertation |
| D3 | Team work | Seminars | Design exercises<br>Project and dissertation |
| D4 | Ability to work alone | Study skills information in student handbook | Distance learning pack<br>Work based assessments<br>Project and dissertation |

| **10(c) Programme Intended Learning Outcomes:** | | **Teaching and Learning Methods and Strategies** |
|---|---|---|
| A | Knowledge and understanding | Knowledge and understanding of A1 – A3 is generally taught via formal lectures and distance learning material, supplemented by seminars and tutorials. Students are encouraged to develop their knowledge and understanding by independent reading for which they are given guidance in the distance learning material. The use of design exercises during the intensive school and work based assessments and application after the intensive school also enable the student to learn. Students will also develop all these skills through their project (MSc and PG Diploma students only) which will require all three skills to be demonstrated. Student meetings with academic staff will allow students the opportunity to discuss issues and develop these skills. |
| 1 | Advanced technology and technological developments | |
| 2 | Business applications of | |
| 3 | Concepts of non technical issues | |
| B | Subject-specific/professional skills | Subject specific skills are highly relevant in this programme. Lectures and design exercises are a key element to teaching subject specific skills. In addition, distance learning material is used to develop an understanding of theoretical design concepts, project planning and project and resource management theory and skills.<br>Students are encouraged to learn by application, both during the module and in a work based environment. Design exercises during the modules and work based application as part of the post school study are the key methods for enabling the students to obtain and improve these important skills. In |
| 1 | Theoretical design concepts and practical implementation | |
| 2 | Competence in software programs | |
| 3 | Project planning, project and resource management | |

| | | |
|---|---|---|
| | | particular, design exercises require the student to apply theoretical work in a practical way, use a variety of software and organise and manage the design process. In addition, skill B2 is supplemented by the delivery system for the distance learning material which is a web based system called Blackboard. Skill B3 is also developed through the actual participation in the programme which requires student to plan their studies and project in conjunction with full time employment.<br>Undertaking a project and preparing a dissertation will also require the students (MSc and PG Diploma only) to develop their skills in this area. It is likely that many projects will include both B1 and B2. In addition, the management of the project programme, contribution of others and timely delivery will require students to develop B3. |
| C | Cognitive skills | Cognitive skills are taught primarily through design classes, case studies and seminars. Development of these skills is particularly linked to industrial and work based application such as group and individual design exercises and work based, post school assignments. All projects (MSc and PG Diploma students only) will also require the use and development of all these cognitive skills. |
| 1 | Collation, analysis and evaluation of data | |
| 2 | Problem formulation and solving | |
| 3 | Decision making | |
| D | Key (transferable) skills | The key transferable skills are demonstrated in seminars and through the study skills information in the student handbook. This information is particularly important for the distance learning element of the programme. Expertise in these skills is developed by module presentations, where applicable (D1), design exercises (D3) and work based assignments (D1, D2, D4).<br>The actual completion of the programme, including the distance learning pack, will, in itself, significantly develop key skills (D2, D4). The student must combine this study with commitments at work and at home.<br>In addition, all these key skills will be essential for the successful completion of the project (MSc and PG Diploma students only) and will be developed through guidance from academic staff/administrative staff as well as practical implementation. |
| 1 | Communication skills | |
| 2 | Time management | |
| 3 | Team working | |
| 4 | Ability to work alone | |

| 10(d) Programme Intended Learning Outcomes: | | Assessment Strategy and Methods |
|---|---|---|
| A | Knowledge and understanding | Knowledge and understanding is assessed via unseen written examination, course assignments and the project dissertation. For A1 and A2 this is supplemented by performance in design exercises, where appropriate. |
| B | Subject-specific/professional skills | Subject specific skills are essentially assessed via design exercises (where appropriate) and course assignments. Theoretical design concepts and practical implementation (B1) is also assessed via the unseen written examination. All skills will also be assessed via the project dissertation. |
| C | Cognitive skills | Cognitive skills are assessed by post school assignments and unseen written examinations. Cognitive skills will also be closely assessed in the project dissertation as this will require students to clearly demonstrate problem identification and solving capability. |
| D | Key (transferable) skills | Communication skills (D1) is the most assessed key skills. Assessment includes design exercises and course assignments. Team working (D3) is also assessed by any group design exercises. The other skills are not formally assessed in the programme although their implementation is essential for a student to successfully complete the taught element of the programme and the project. |

## 11 Programme Curriculum, Structure and Features:

**Programme Features**

a. Duration of the course

The programme will be delivered as a part time modular programme.
The minimum duration of the programme is 2 years and the maximum duration is 3 years.

The structure of the programme will be:

<u>MSc</u>

Students must complete 10 modules and an 80-credit research project.

**Postgraduate Diploma**

Students must complete 8 modules and a 40-credit research project.

Postgraduate Certificate

Students must complete 6 modules.

Student Project

Projects should be started as soon as the student commences their studies and, where possible, should be related to their work environment. Following consultation with the Degree Programme Director and other academic staff where appropriate, each student will select a research topic and will be allocated an academic supervisor at Newcastle. A project specification will be completed by the student and approved by the supervisor. Regular contact between the supervisor and the student will be maintained by telephone and emails. All students will be issued with a project handbook which will provide clear guidelines on the preparation of the project. In addition, the lecturing staff whilst delivering their intensive school material in Singapore will interview each student to assess the progress of their research project and provide additional guidance.

Delivery of Programme

The programme will be delivered in three elements:

- Pre school study
- Intensive school
- Post school study

The balance of assessment will vary between modules but the generic outline will be:

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| Assignments (including design exercises): | 40 – 60% of the total mark<br>(Max of 3 assignments per module) |
| Unseen written examination: | 40 – 60% of the total mark |

See Appendix A for list of modules.

b. Overall credit arrangements

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|---|---|
| Master of Science: | 180 credits |
| Postgraduate Diploma | 120 credits |
| Postgraduate Certificate | 60 credits |

c. Module credit arrangements

Each taught module is a 10 credit module and this equates to 100 hours study time.

MSc 10 modules @10 credits each + 80 credit project = 180 credits = 1800 hours
PG Diploma 8 modules @ 10 credits each + 40 credit project = 120 credits = 1200 hours
PG Certificate 6 modules @10 credits each = 60 credits = 600 hours

d. Requirements for progression

All modules must be passed by the student. One re-sit opportunity is permitted (details in Programme Regulations). Students can continue to undertake modules whilst awaiting a re-sit opportunity.

Innovative features of the course
The programme has a number of innovative features, in particular:

- Designed for graduates and engineers working full time.
- Programme is designed to be highly relevant to needs of students in Singapore and elsewhere in Asia.
- Modules delivered by a combination of distance learning and intensive schools.
- Distance learning material available via a web based IT system.

**Curriculum and Structure**

| Module | Credits | Learning Outcomes |
|---|---|---|
| MAR815 | 10 | A2, A3, B2, B3, C1, C2, C3, D1, D2, D3, D4 |
| MAR834 | 10 | A3, B3, C1, C2, C3, D1, D2, D3 |
| MAR818 | 10 | A1, B1, B2, B3, C1, C2, C3, D1 |
| MAR814 | 10 | A1, A2, A3, B1, B2, B3, C1, C2, C3, D1 |
| MAR816 | 10 | A1, A2, A3, B1, B2, B3, C1, C2, C3, D1 |
| MAR891 | 10 | A1, A2, A3, B1, B2, B3, C1, C2, C3, D1 |
| MAR862 | 10 | A1, A2, A3, B2, B3, C1, C2, C3, D1, D2, D3, D4 |
| MAR892 | 10 | A1, A2, A3, B1, B2, B3, C1, C2, C3, D1 |
| MAR893 | 10 | A1, A2, A3, B2, B3, C1, C2, C3, D1, D2, D3, D4 |
| MAR877 | 10 | A3, B3, C1, C2, C3, D1, D2, D3, D4 |
| MAR898 | 80 | A1, A2, A3, B2, B3, C1, C2, C3, D1, D2, D3, D4 |
| MAR896 | 40 | A1, A2, A3, B2, B3, C1, C2, C3, D1, D2, D3, D4 |

For list of module names, see Appendix A

MSc students will have no elective taught modules.
PG Diploma students will choose 8 taught modules from the list of 10.
PG Certificate students will choose 6 taught modules from the list of 10.
CPD students will choose any taught module from the list of 10.
However, the selection of taught modules chosen (for PG Certificate students only) must be approved by the Degree Programme Director in order to ensure a coherent programme of study which will develop the individual's knowledge, understanding and skills in appropriate areas.

Depth and breadth of knowledge of the chosen technology, its application in industry and associated non technical issues (economics, environmental, legislative, health and safety) is substantially developed via all the modules taught to an advanced level (A1 – A3, B1). Planning, undertaking and presentation of design exercises and post course assignments enable students to enhance their skills in the application of subject specific skills by the use of software, planning and management of tasks and resources (B1 – B3). Key transferable skills are also developed by presentations, written assignments, management of deadlines and limited time available, working with strangers on design exercises and working alone and remotely on distance learning material and post course assignments (D1 – D4). Completing design exercises and assignments which require the handling and analysis of data, formulating and solving problems and making decisions, require all cognitive skills to be developed by the student (C1 – C4).

## 12 Criteria for Admission:

A-Level Subjects and Grades
Maths/Science subjects preferred

Undergraduate Degree
BEng Honours in marine technology subject or relevant engineering subject (e.g. civil, mechanical or environmental engineering). Class 2.2 or above.

Alternative entry qualifications
Students with non standard entry qualifications will be considered on a case by case basis. Key criteria will be academic qualifications (equivalent to 2.2 Honours degree), technical experience, level of responsibility and leadership.

Standard of English
An applicant whose first language is not English, will be required to satisfy the Programme Director of an ability to understand and communicate, in both written and spoken English, which is adequate for the purpose of pursuing the course of study. Either before or after the application for admission to the Programme, the Course Director may require the applicant to attend a Programme of instruction and reach a satisfactory standard in the English Language. The minimum English Language proficiency requirement is IELTS 6.5 (or equivalent).

Admissions Policy
All applicants, standard or non standard entry will be considered based on their academic qualifications and their relevant technical industrial experience.

All admissions will be undertaken in accordance with the equal opportunities policy set out in the Degree Programme Handbook.

Applicants who do not meet the standard entry qualification, will be asked to submit a CV detailing academic qualifications and industrial experience. This will be reviewed by the Programme Director on a case by case basis. Those not meeting entry standard levels may be advised on how the appropriate standard required can be achieved. The candidate will be informed of the outcome in writing.

## 13 Support for Students and their Learning:

Induction

Induction will be primarily via the local partner organisation (VKMCS) who will undertake an induction session for each student. Additional induction will be via the Degree Programme handbook and the Blackboard system. A programme administrator can be contacted by telephone, fax or email.

Study skills support

Study skills support will be offered via VKMCS and the Degree Programme handbook. The Blackboard system will provide study skills information and support via the forum boards system. Support will be available from the programme administrator and the academic staff. This support will be via email or face to face meetings with academic staff when they visit Singapore.

Academic support

The Degree Programme handbook details contact details of each module leader and their nominated deputy. Further academic support can be obtained during the intensive school when the students have the opportunity to meet the academic staff involved. The discussion boards on the Blackboard system also offer academic and peer support to the student.

Pastoral support

Pastoral support will be available via the VKMCS, Programme Administrator and Programme Director.

Support for Special Needs

VKMCS, the Programme Administrator and academic staff involved in the Programme will endeavour to ensure that support for students with special needs is provided as far as is possible.

Learning resources

The following learning resources will be made available to each student:

- Web based Blackboard system
- Key reference text book for each module which is to be supplied by the programme.
- Distance learning material.

**14 Methods for Evaluating and Improving the Quality and Standards of Teaching and Learning**

Module reviews

Modules will be reviewed by the module leader either on an annual basis or after each module delivery (whichever is the longer period) following evaluation of student feedback. The review process will be monitored by the School's Board of Studies.

Programme reviews

Programme reviews will take place through an Annual Monitoring Report from the Board of Studies to FTLC and will consider feedback from students, industry and module leaders.

External examiner reports

External examiner reports will be supplied to the Board of Studies. The Board of Studies will also review the report and any action identified as a result of this review will be documented and actioned.

Accreditation reports

Accreditation reports will be reviewed by the Board of Studies and any action identified as a result of the review will be documented and actioned.

Student evaluations

Student evaluations will be sought:
1. After each module
2. As a general 'programme review' on a regular basis.

Student evaluations will be considered at the next Board of Studies meeting.

Feedback Mechanisms

Student representatives will be welcomed on the Board of Studies. Representatives will be elected during the initial induction session, and arrangements for video- or telephone-conferencing will be made to enable representatives to participate in meetings of the Board. This will ensure feedback to the students about their comments and suggestions.

Faculty and University Review Mechanisms

Taught Programme Review
Internal Subject Review
External Examiners reports
Accreditation reports (Singapore institutions including Ministry of Education, UK institutions - IMarEST and RINA).

**15 Regulation of Assessment:**

Pass Marks
Pass mark for modules and industrial project is 50%.

Course Requirements
A student must pass all the modules and the industrial project in order to be eligible for a postgraduate award. One resit of each module is permitted and students can continue taking modules whilst waiting for the opportunity to resit.

Weighting of Modules
All modules are worth 10 credits.

Role of the External Examiner
External Examiners are appointed in accordance with the university's standard procedure.
The role of the External Examiner is:
- Approve examination questions
- Attend Board of Examiners meetings
- Review distance learning material (where appropriate)
- Report to university and Board of Studies on comparability of the programme with other postgraduate schemes

**16 Indicators of Quality and Standards:**

Professional Accreditation Reports - Approval of modules for CPD.

Internal Review Reports - Internal reviews as undertaken at Newcastle.

Previous QAA Reports - new programme so no previous QAA Reports available.

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
The School Web Site
The University and Degree Programme Regulations
The Degree Programme Handbook

**Appendix A - Module List**

| Module Number | Descriptive Title | Credits |
|---|---|---|
| MAR815 | Marine project management | 10 |
| MAR834 | Regulatory framework for the marine industry | 10 |
| MAR818 | Optimisation in engineering design | 10 |
| MAR814 | Advanced Marine engineering design | 10 |
| MAR816 | Marine system identification, modelling and control | 10 |
| MAR891 | Ship design and construction | 10 |
| MAR862 | Surveying ships and offshore installations | 10 |
| MAR892 | Advanced Offshore technology | 10 |
| MAR893 | Marine transport and logistics | 10 |
| MAR877 | Managing human resources | 10 |
| MAR898 | Industrial Project and Report (MSc) | 80 |
| MAR896 | Industrial Project and Report (Pg Diploma) | 40 |