	PROGRAMME SPECIFICATION	Newcastle University

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	MSc
4	**Programme Title**	Computing Science
5	**Programme Code**	5055F, 5055P
6	**Programme Accreditation**	British Computer Society
7	**QAA Subject Benchmark(s)**	Computing Science
8	**FHEQ Level**	Level M
9	**Last updated**	4/12/08

10	**Programme Aims**

- To produce graduates who will have an understanding of the theory and principles which underlie Computing Science and Software Engineering. They will have knowledge and experience of the fundamental techniques used in requirements analysis, specification, design, development, validation, documentation, maintenance and evaluation of software systems in accordance with modern principles of Software Engineering. They will have skills in the application of these techniques in the development of systems software and software for a range of applications. They will also have an understanding of the architectural concepts underlying the hardware systems on which such software is run. Graduates will have experience of a range of software and hardware systems in current use in the profession, an understanding of current trends in their development, and an appreciation of the professional, ethical and social dimensions of the subject. Graduates will have demonstrated the ability to apply the principles and practices of Computing Science in tackling a significant technical problem; the solution typically demonstrates a soundly based vision of the direction of developments of Computing Science. Graduates will have a good understanding of issues at the forefront of Computing Science and will have knowledge of up to date tools and techniques. They will be able to critically evaluate and test Computing systems. Many graduates go on to employment in technical positions in software houses and with large-scale users; some graduates pursue research careers. Some students seek to develop market-niche software in small companies.
- To provide a programme which meets the FHEQ at Masters level and which takes appropriate account of the draft subject benchmark statements in Computing.

11	**Learning Outcomes**

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have references to the benchmark statements for (subject) (X).

Knowledge and Understanding

On completing the programme students should be able to demonstrate knowledge and understanding of:
A1. A high level programming language
A2. A number of applications within Computing Science
A3. The principles of software engineering
A4. Techniques for the development of algorithms for a range of applications
A5. Computer organisation and architectures
A6. Professional issues to cover: social, ethical and legal aspects
A7. Some of the theoretical foundations of Computing Science

Teaching and Learning Methods

Lectures are the main way of imparting knowledge and understanding (A1-A7). Practical classes feature prominently, especially to support the programming and software engineering modules (A1, A3). Students are expected to contribute to their own learning experience by independent reading. They are provided with references to books which are categorised as *essential*, *recommended*, and *background* reading, as well as scientific papers and other learning materials including appropriate web URLs.

Assessment Strategy

Knowledge and understanding are assessed by means of closed and open book written examinations, and coursework, including group and individual project reports (A1-A6).

Intellectual Skills

On completing the programme students should be able to demonstrate skills in:
B1. The process of software development
B2. The use of hardware and software systems
B3. The identification and implementation of appropriate algorithms and data structures
B4. The use and provision of network information services
B5. The use of programming languages
B6. Analysis of system requirements and the production of system specifications

Teaching and Learning Methods

B1-B6 feature prominently in all modules. In particular a group project within CSC8005 gives students experience of working within teams to engineer a complex piece of software (B1-B6). An individual project during Semester 3 requires students to develop a large piece of software to a customer's requirements (B1-B6). In all other modules, coursework is used to develop these skills (B1-B6).

Assessment Strategy

B1-B6 feature prominently in all modules. In particular a group project within CSC8005 gives students experience of working within teams to engineer a complex piece of software (B1-B6). An individual project during Semester 3 requires students to develop a large piece of software to a customer's requirements (B1-B6). In all other modules, coursework is used to develop these skills (B1-B6).

Practical Skills

On completing the programme students should be able to:
A successful student will have the ability to:
C1. Conduct investigations using the technical and professional literature
C2. Use and evaluate appropriate tools and techniques
C3. Undertake critical evaluation (both theoretical and empirical) of alternative solutions
C4. Formulate problems and identify suitable approaches to solving them
C5. Reason abstractly about the structure and behaviour of computer systems

Teaching and Learning Methods

All modules involve coursework, much of which involves problem solving skills (C4). This is especially so in the group and individual projects where students need to select, evaluate and apply appropriate tools and techniques (C2). Here and elsewhere students will need to investigate possible alternatives in the technical and professional literature (C1, C3), and to reason about computer systems (C5).

Assessment Strategy

Cognitive skills are assessed by a range of coursework (reports, design documents, etc.) (C1-C5).

Transferable/Key Skills

On completing the programme students should be able to be proficient in:
D1. Written communication

D2. Problem solving
D3. Interpersonal communication
D4. Initiative
D5. Oral presentation
D6. Adaptability
D7. Teamwork
D8. Planning and organisation
D9. Computer literacy

The above covers the generic knowledge and understanding, subject/specific/professional skills, cognitive skills and key (transferable) skills of a 'typical' Masters level graduate, although for each individual student there will be variations depending on the dissertation taken during Semester 3.

Teaching and Learning Methods

Key skills feature throughout the programme; teamwork in the CSC8005 group project (D7); oral presentation, interpersonal communication, and planning and organisation in the Semester 3 Project module (CSC8099), as well as the group project (D3, D5, D8); written communication in all modules, but especially in the Semester 3 project (D1); problem solving, initiative and adaptability are necessarily covered throughout the programme (D2, D4, D6, D9).

The strategy of the degree programme is to give a broad coverage of the subject of Computing Science in Semesters 1 and 2, and then to provide specialisation in the project undertaken in Semester 3.

Assessment Strategy

Key (transferable) skills are assessed by both written and oral presentations (D1-D9). Teamwork in the group project is assessed both by the module leader at team oral presentations and by a group monitor (a member of teaching staff) who attends group formal meetings (D5, D7).

12	Programme Curriculum, Structure and Features

Basic structure& Key features of the programme (including what makes the programme distinctive)

All modules are compulsory. The course has 180 credits. The taught part of the course takes place from September to June. There are six taught 20-credit modules split equally across semesters one and two. In June students begin work on the 60-credit individual project which is submitted at the end of August.

Programme regulations (link to on-line version)
http://www.ncl.ac.uk/regulations/programme/

13	Criteria for admission

Entry qualifications
A good honours degree (2ii or equivalent) in any subject. Graduates in Computing Science will also be considered, but will need to be dealt with on an individual basis because of the potential overlap of their first degree with the modules in this MSc.

Admissions policy/selection tools
Suitable applicants are made an offer without interview as soon as possible after their application forms have been received and considered

Non-standard Entry Requirements

Additional Requirements
None.

Level of English Language capability IELTS 6.5 (or equivalent)

14   **Support for Student Learning**

The Student Services portal provides links to key services and other information and is available at: *http://www.ncl.ac.uk/students/*

Induction
During the first week of the first semester students attend an induction programme. New students will be given a general introduction to University life and the University's principle support services and general information about the School and their programme, as described in the Degree Programme Handbook. New and continuing students will be given detailed programme information and the timetable of lectures/practicals/labs/ tutorials/etc. The International Office offers an additional induction programme for overseas students.

Study skills support
Students will learn a range of Personal Transferable Skills, including Study Skills, as outlined in the Programme Specification. Some of this material, e.g. time management is covered in the appropriate Induction Programme. Students are explicitly tutored on their approach to both group and individual projects.

Numeracy support is available through Maths Aid and help with academic writing is available from the Writing Centre (further information is available from the Robinson Library).

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. In addition the University offers a range of support services, including one-to-one counselling and guidance or group sessions / workshops on a range of topics, such as emotional issues e.g. Stress and anxiety, student finance and budgeting, disability matters etc. There is specialist support available for students with dyslexia and mental health issues. Furthermore, the Union Society operates a Student Advice Centre, which can provide advocacy and support to students on a range of topics including housing, debt, legal issues etc.

Support for students with disabilities
The University's Disability Support Service provides help and advice for disabled students at the University - and those thinking of coming to Newcastle. It provides individuals with: advice about the University's facilities, services and the accessibility of campus; details about the technical support available; guidance in study skills and advice on financial support arrangements; a resources room with equipment and software to assist students in their studies.

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.

The School of Computing Science has well equipped computer laboratories consisting of networked PCs. Key software used in the support and delivery of the programme is available to students free of charge. The School has its own library which is mainly used for the support of advanced topics and is a particularly valuable resource for individual projects.

All new students whose first language is not English are required to take an English

Language Proficiency Test. This is administered by INTO Newcastle University Centre on behalf of Newcastle University. Where appropriate, in-sessional language training can be provided. The INTO Newcastle University Centre houses a range of resources which may be particularly appropriate for those interested in an Erasmus exchange.

15	Methods for evaluating and improving the quality and standards of teaching and learning

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 Board of Studies and/or the School Teaching and Learning Committee. 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. The FTLC takes an overview of all programmes within the Faculty and reports any Faculty or institutional issues to the University Teaching and Learning Committee.

External Examiner reports
External Examiner reports are considered by the Board of Studies. The Board responds to these reports through Faculty Teaching and Learning Committee. External Examiner reports are shared with institutional student representatives, through the Staff-Student Committee.

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. The results from student surveys are considered as part of the Annual Monitoring and Review of the programme and any arising actions are captured at programme and School / institutional level and reported to the appropriate body.

Mechanisms for gaining student feedback
Feedback is channelled 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 process. Every five years degree programmes in each subject area are subject to periodic review. This involves both the detailed consideration of a range of documentation, and a two-day review visit by a review team which includes an external subject specialist in addition to University and Faculty representatives. Following the review a report is produced, which forms the basis for a decision by University Teaching and Learning Committee on whether the programmes reviewed should be re-approved for a further five year period.

Accreditation reports

Additional mechanisms

16	Regulation of assessment

Pass mark
The pass mark is 50%

Course requirements
Progression is subject to the University's Masters Degree Progress Regulations, Taught and Research and Examination Conventions for Taught Masters Degrees. Limited compensation up to 40 credits of the taught element and down to a mark of 40% is possible and there are reassessment opportunities, with certain restrictions.

Where the regulations included in this document differ from other University regulations, the regulations included here take precedence. Progression is subject to the University's Taught Postgraduate Master's Degree Progress Regulations and Taught Postgraduate Master's Degree Examination Conventions.

The University employs a common marking scheme, which is specified in the Taught Postgraduate Examination Conventions, namely:

Summary description applicable to postgraduate Masters programmes		Summary description applicable to postgraduate Certificate and Diploma programmes	
<50	Fail	<50	Fail
50-59	Pass	50 or above	Pass
60-69	Pass with Merit		
70 or above	Pass with Distinction		

Award of the MSc degree in Computing Science

To obtain the MSc degree, candidates must satisfy the examiners in the two assessed components:

Component 1: The first and second semester taught modules (120 credits). A candidate must obtain a weighted average mark for the component of at least 50. Failure of any module may be compensatable according to the regulations defined in the Taught Postgraduate Master's Degree Examination Conventions.

Component 2: 60-credit individual project with dissertation module.

For the purpose of clarification, in what follows the pass/fail distinction reflects the achievement after any compensation rules have been applied to individual module assessments.

A student will be recommended for the *award of MSc with Distinction* if at the first attempt they have achieved a pass mark in 180 credits with an average mark across all 180 credits of at least 70 and have a component 2 mark of at least 70.

A student will be recommended for the *award of MSc with Merit* if at the first attempt they have achieved a pass mark in 180 credits with an average mark across all 180 credits of at least 60 and have a component 2 mark of at least 60.

A student will be recommended for the *award of MSc* if they have achieved a pass mark in 160 credits with an average mark across all 180 credits of at least 50.

Award of the Diploma or Certificate in Computing Science

Candidates not meeting the requirements stated above for the MSc may be recommended for the award of *Diploma in Computing Science* or *Certificate in Computing Science* only according to the regulations defined here.

A postgraduate Diploma may be awarded to a candidate who has an average of at least 50 across the 120 taught credits in the modules that comprise Component 1 as defined above.

A postgraduate Certificate may be awarded to a candidate who has passed a total of 60 taught credits from any modules that comprise Component 1 as defined above.

Role of the External Examiner
An External Examiner, a distinguished member of the subject community, is appointed by

Faculty Teaching and Learning Committee, following recommendation from the Board of Studies. The External Examiner is expected to:
  i. See and approve assessment papers
  ii. Moderate examination and coursework marking
  iii. Attend the Board of Examiners
  iv. Report to the University on the standards of the programme

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In addition, information relating to the programme is provided in:

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

The School Brochure

Degree Programme and University Regulations: http://www.ncl.ac.uk/regulations/docs/

The Degree Programme Handbook

Please note. 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.

Mapping of Intended Learning Outcomes onto Curriculum/Modules

Either

Intended Learning Outcome	Module codes (Compulsory in Bold)
A1 A good knowledge of a high level programming language	**CSC8001**, *CSC8002*, **CSC8005, CSC8008.**
A2 A number of applications within Computing Science	**CSC8001**, *CSC8002*, **CSC8010, CSC8005, CSC8004, CSC8008,** *EDU8213*.
A3 The principles of software engineering	**CSC8001**, *CSC8002*, **CSC8005.**
A4 Techniques for the development of algorithms for a range of applications	**CSC8001**, *CSC8002*, **CSC8005, CSC8008.**
A5 Computer organisation and architectures	**CSC8004, CSC8010.**
A6 Professional issues to cover: social, ethical and legal aspects	**CSC8010, CSC8005.**
A7 Some of the theoretical foundations of Computing Science	*CSC8002*, **CSC8010.**
B1 The process of software development	**CSC8001**, *CSC8002*, **CSC8005.**
B2 The use of hardware and software systems	**CSC8001**, *CSC8002*, **CSC8010.**
B3 The identification and implementation of appropriate algorithms and data structures	**CSC8001**, *CSC8002*, **CSC8005.**
B4 The use and provision of network information services	**CSC8001**, *CSC8002*, **CSC8004, CSC8008.**
B5 The use of programming languages	**CSC8001**, *CSC8002*, **CSC8008.**
C1 The ability to conduct investigations using the technical and professional literature	**CSC8001, CSC8005, CSC8009, CSC8099.**
C2 The ability to use and evaluate appropriate tools and techniques	**CSC8001**, *CSC8002*, **CSC8005, CSC8009, CSC8099,** *EDU8213***.**
C3 The ability to undertake critical evaluation (both theoretical and empirical) of alternative solutions	**CSC8004, CSC8010, CSC8009, CSC8099.**
C4 The ability to formulate problems and identify suitable approaches to solving them	*CSC8002*, **CSC8009, CSC8008, CSC8099.**
C5 The ability to reason abstractly about the structure and behaviour of computer systems	**CSC8001**, *CSC8002*, **CSC8005, CSC8004.**
D1 Written communication	**CSC8001**, *CSC8002*, **CSC8009, CSC8004, CSC8005, CSC8099,** *EDU8213***.**
D2 Problem solving	**CSC8001**, *CSC8002*, **CSC8008, CSC8005, CSC8004, CSC8009, CSC8099.**
D3 Interpersonal communication	**CSC8005, CSC8009, CSC8099.**

D4 Initiative	**CSC8001,** *CSC8002***, CSC8009, CSC8099.**
D5 Oral presentation	**CSC8005, CSC8099.**
D6 Adaptability	**CSC8001,** *CSC8002***, CSC8005, CSC8009, CSC8099.**
D7 Teamwork	**CSC8005.**
D8 Planning and organisation	**CSC8001,** *CSC8002***, CSC8005, CSC8009, CSC8099.**
D9 Computer literacy	**CSC8001,** *CSC8002***, CSC8005, CSC8009, CSC8099.**