	PROGRAMME SPECIFICATION	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	MSc
4	**Programme Title**	System Design for Internet Applications
5	**UCAS/Programme Code**	5056
6	**Programme Accreditation**	British Computer Society
7	**QAA Subject Benchmark(s)**	Computing
8	**FHEQ Level**	M
9	**Date written/revised**	20th December 2007

10	**Programme Aims**

1. To equip students with the broad range of skills and knowledge required for designing advanced Internet Applications. These skills will enable graduates of the course to design, build and extend the Internet infrastructure and use it to design a variety of distributed applications in the fields of scientific computing, electronic commerce, education, entertainment, information and service brokerage to name just a few.
2. 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 Computing.

Knowledge and Understanding

On completing the programme students should able to demonstrate knowledge and understanding of:
A1. Programming tools and techniques necessary for structuring Internet applications
A2. Web and Grid services middleware
A3. Java/CORBA component middleware
A4. Fundamental algorithms of distributed systems
A5. Information management
A6. Design, implementation, testing and validation of distributed applications
A7. Techniques for improving security of network-based applications
A8. Future trends in networked information systems

Teaching and Learning Methods

The primary means of imparting knowledge and understanding is through lectures, associated coursework and project work (A1-A8). The course is based on a mixture of taught modules and project work. Taught module: a given course module is either a traditional taught module involving lectures supplemented by laboratory course work or a continually assessed, seminar-based guided reading module (that enforces A8), involving extensive student participation. Independent learning is encouraged through the provision of reading lists, literature reviews and critical analysis of research papers, and ready access to online information resources. Adequate time is provided in all modules for private study for independent learning.

Assessment Strategy

Knowledge and understanding are assessed by unseen written examinations, student

seminars and associated reports, coursework, group project reports and associated computer programs and an individual dissertation (A1-A8).

Intellectual Skills

On completing the programme students should be able to:

B1. Carry out and write up an extended research project involving where appropriate a literature review, problem specifications, design, implementation, and analysis.

B2. Be familiar with the process of software development

B3. Have expertise in the use and applicability of up-to-date software development tools.

B4. Design and implement new applications by composing and extending existing software components, services and applications.

B5. Analyse system requirements and the production of system specifications.

Teaching and Learning Methods

B2-B5 feature prominently in all modules; the group project in particular requires students to work in teams and develop a working system. The individual project during the second half of the course requires students to carry out and write up an extended research project involving where appropriate a literature review, problem specification, design, implementation, and analysis (B1-B5).

Assessment Strategy

B1-B5 are assessed by coursework consisting of reports plus computer programs, group project reports, plus individual dissertation.

Practical Skills

On completing the programme students should be able to:

C1. Critically evaluate research and literature relating to networking, distributed applications

C2. Use and evaluate appropriate tools and techniques

C3. Undertake critical evaluation (both theoretical and empirical) of alternative solutions

C4. Solve system design problems

Teaching and Learning Methods

Practical skills feature in all modules since all involve an amount of coursework (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).
Practical skills are also developed through seminars, and individual and group projects.

Assessment Strategy

C1-C4 are assessed by unseen written examinations, student seminars and associated reports, coursework, group project reports and associated computer programs and individual dissertation.

Transferable/Key Skills

On completing the programme students should have skills in:

D1. Oral communication

D2. Written communication

D3. Use of computer based literacy resources

D4. Working as part of a team

D5. Creativity

D6. Planning and organisation

Teaching and Learning Methods

Oral presentation skills are exercised by group discussions during group project exercises, and by the preparation of oral presentations on specific research topics (D1). Written communication skills are developed during independent study, the preparation of coursework, web page design, poster presentation and through the completion of the research project proposal and the project thesis (D2). Formal lectures and practicals address the use of online literacy resources and research techniques, reinforced through the use of practical exercises

(D3). The group project develops team skills, creativity, planning and organisation (D4, D5, D6). The preparation and execution of the individual project address creativity, planning and organisation skills (D5, D6).

Assessment Strategy
D1-D6 are assessed through coursework, the group and individual projects, and student seminars.

12   Programme Curriculum, Structure and Features
Basic structure of the programme
All modules are compulsory. The course has 180 Credits. The full-time version of the course will last one whole year and will be split in two halves. The first half, from mid-September to March comprises taught components covering the generic subject areas required in an MSc: advanced knowledge, transferable and personal skills and team working culminating in a group project. In addition, students will undertake preparatory work for their individual systems projects. The second half will be taken up entirely by the individual systems project work with dissertation. The first half of the course is composed of seven taught modules of 10 credits each, one 5-credit seminar-based guided reading module and a 15-credit group project module.
Key features of the programme (including what makes the programme distinctive)
Subject to agreement with industry, the project work can be undertaken with a sponsoring company. To gain professional accreditation students must have passed a practical problem-solving project at the first attempt. Modules in the first semester are taught in intensive mode.
Programme regulations (link to on-line version)
http://www.ncl.ac.uk/regulations/programme/

13   Criteria for admission
Entry qualifications The MSc is intended for graduates with a first degree in computing science (minimum 2(ii) standard) or mature candidates with relevant industrial experience (typically, industrial experience that qualifies the candidate to membership of the British Computer Society is considered sufficient). *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. *Additional Requirements* None. *Level of English Language capability* For applicants whose first language is not English we ask for IELTS 6.5 or TOEFL 233 (computer-based).

14   Support for Student Learning
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 (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. 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.

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

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. For further details see http://www.ncl.ac.uk/disability-support/

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

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. A workstation room for the exclusive use of these students has been made available. 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 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 exchange. See http://www.ncl.ac.uk/undergraduate/support/facilities/langcen.phtml

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 Staff Student Committee and 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 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. 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.

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, see
http://www.ncl.ac.uk/aqss/qsh/internal_subject_review/index.php

Accreditation reports
This programme was last accredited by the British Computer Society in November 2003. A further accreditation visit is planned during 2008.

Additional mechanisms
None.

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 (http://www.ncl.ac.uk/calendar/university.regs/tpmdepr.pdf) and Examination Conventions for Taught Masters Degrees (http://www.ncl.ac.uk/calendar/university.regs/tpmdeprexamconv.pdf). Limited compensation in 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.

Common Marking Scheme
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		

Role of the External Examiner

An External Examiner, a distinguished member of the subject community, is appointed by Faculty Teaching and Learning Committee, after recommendation from the Board of Studies. The External Examiner is expected to:

    See and approve examination papers
    Moderate examination and coursework marking
    Attend the Board of Examiners
    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 (see http://www.ncl.ac.uk/undergraduate/)

The School Brochure (contact enquiries@ncl.ac.uk)

The University Regulations (see http://www.ncl.ac.uk/calendar/university.regs/)

The Degree Programme Handbook
(see: http://www.cs.ncl.ac.uk/teaching/postgraduate/index.php)

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

Intended Learning Outcome	Module codes (Compulsory in Bold)
A1	**CSC8102, CSC8104, CSC8108.**
A2	**CSC8101, CSC8104, CSC8199.**
A3	**CSC8104.**
A4	**CSC8103.**
A5	**CSC8101.**
A6	**CSC8105, CSC8106, CSC8109.**
A7	**CSC8102.**
A8	**CSC8107.**
B1	**CSC8199.**
B2	**CSC8106.**
B3	**CSC8104, CSC8105, CSC8108,.**
B4	**CSC8101, CSC8104.**
B5	**CSC8106.**
C1	**CSC8107, CSC8199.**
C2	**CSC8109, CSC8199.**
C3	**CSC8199.**
C4	**CSC8109, CSC8199.**
D1	**CSC8107, CSC8199.**
D2	**CSC8101, CSC8102, CSC8103, CSC8104, CSC8105, CSC8106, CSC8107, CSC8108, CSC8199.**
D3	**CSC8101, CSC8102, CSC8103, CSC8104, CSC8105, CSC8106, CSC8107, CSC8108, CSC8199.**
D4	**CSC8109.**
D5	**CSC8109.**
D6	**CSC8109, CSC8199.**