

PROGRAMME SPECIFICATION

1	Awarding Institution	Newcastle University
2	Teaching Institution	Newcastle University
3	Final Award	MSc
4	Programme Title	Cloud Computing
5	Programme Code	5056F 5056P
6	Programme Accreditation	British Computer Society
7	QAA Subject Benchmark(s)	Computing
8	FHEQ Level	Level 7
9	Last updated	May 2023

10 Programme Aims

1. To equip students with the skills and knowledge required to develop and assess cloud computing applications
2. To provide a qualification enhancing employment prospects in cloud computing
3. To develop research skills
4. To develop and improve key skills in written and oral communication and in teamwork
5. To develop and improve skills in using the literature and information technology resources relevant to internet based distributed computing
6. To encourage the development of creativity skills
7. To develop skills in critical assessment, analysis and storage of information
8. To provide a programme which meets the accreditation requirements of the appropriate professional bodies, thus providing a basis for further professional development and lifelong learning
9. To address the relevant professional, legal and ethical issues relevant to the development, assessment and maintenance of Internet and enterprise applications
10. To provide an international perspective on developments in distributed enterprise computing
11. To provide a programme which meets the FHEQ at Masters level and 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 be able to demonstrate knowledge and understanding of:

- A1. Programming tools and techniques necessary for structuring cloud 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
- A9. Understanding of major professional, social, legal and ethical issues associated with work in cloud computing applications

<p>Teaching and Learning Methods</p> <p>The primary means of imparting knowledge and understanding is through lectures, associated coursework and project work (A1-A9). 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.</p>
<p>Assessment Strategy</p> <p>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-A9).</p>
<p style="text-align: center;">Intellectual Skills</p> <p>On completing the programme students should be able to:</p> <p>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.</p>
<p>Teaching and Learning Methods</p> <p>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).</p>
<p>Assessment Strategy</p> <p>B1-B5 are assessed by coursework consisting of reports plus computer programs, group project reports, plus individual dissertation.</p>
<p style="text-align: center;">Practical Skills</p> <p>On completing the programme students should be able to:</p> <p>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</p>
<p>Teaching and Learning Methods</p> <p>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.</p>
<p>Assessment Strategy</p> <p>C1-C4 are assessed by unseen written examinations, student seminars and associated reports, coursework, group project reports and associated computer programs and individual dissertation.</p>
<p style="text-align: center;">Transferable/Key Skills</p> <p>On completing the programme students should have skills in:</p> <p>D1. Oral communication</p>

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) 5056FP: -R5056FP
13 Support for Student Learning Generic information regarding University provision is available at the following link. Generic Information

14 Methods for evaluating and improving the quality and standards of teaching and learning Generic information regarding University provision is available at the following link. Generic Information <i>Accreditation reports</i> The BCS have approved this programme for accreditation for CITP Further Learning Element, CEng/CSci (Partial Fulfilment).

Additional mechanisms
None.

15 Regulation of assessment

Generic information regarding University provision is available at the following link.
[Generic Information](#)

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

The University Prospectus: <https://www.ncl.ac.uk/postgraduate/>

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

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.

