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 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

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### Teaching and Learning Methods

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.

### 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-A9).

### 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.

### Practical Skills

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).

### Transferable/Key Skills

On completing the programme students should have skills in:

- D1. Oral communication
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

Accreditation reports

The BCS have approved this programme for accreditation for CITP Further Learning Element, CEng/CSci (Partial Fulfilment).
### Additional mechanisms
None.

### 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/](https://www.ncl.ac.uk/postgraduate/)
- **Degree Programme and University Regulations:** [http://www.ncl.ac.uk/regulations/docs/](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.