PROGRAMME SPECIFICATION 2025-26	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	MSc
4	**Programme Title**	Computing Science
5	**Programme Code**	5055F
6	**Programme Accreditation**	BCS, The Chartered Institute for IT
7	**QAA Subject Benchmark(s)**	Computing Science
8	**FHEQ Level**	Level 7
9	**Last updated**	November 2024

10 Programme Aims

- To produce graduates who understand the theory and principles which underlie Computer Science and Software Engineering.
- To give graduates knowledge and experience of the fundamental techniques used in requirements analysis, specification, design, development, testing, 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.
- To provide graduates with 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 Computer Science in tackling a significant technical problem; the solution typically demonstrating a soundly based vision of the direction of developments of Computer Science. Graduates will have a good understanding of issues at the forefront of Computer Science and will have a knowledge of up-to-date tools and techniques.
- To prepare students for employment in several different capacities such as in technical positions in large software houses and with large-scale users; in small companies that develop market-niche software; in consultancy and managerial positions; also, to prepare graduates interested in pursuing research careers.
- To provide a programme which meets the FHEQ at Masters level and which takes appropriate account of the QAA subject benchmark statement in Computer Science.

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 QAA benchmark statement for Computer Science.

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. Foundations relevant to the needs of a professional Computer Scientist or Software Engineer.
A8. Principles of computer and network security.

Teaching and Learning Methods

Lectures are the main way of imparting knowledge and understanding (A1-A8). 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-A8).

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
B7. The use of computer security analysis techniques.

Teaching and Learning Methods

B1-B6 feature prominently in all modules. In particular a group project 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, practical work and coursework are used to develop these skills (B1-B6). Computer and Network security, Computer Programming, Computer Networks, Web Technologies, and Database Technology modules all help to develop computer security skills (B7).

Assessment Strategy

Skills B1-B6 are assessed primarily using exercises and coursework in the programming modules, team project and individual project. B7 is assessed primarily using exercises and coursework in the programming modules and in the computer networks and security module.

Practical Skills

On completing the programme students should be able 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 group project (D7); oral presentation, interpersonal communication, and planning and organisation in the Semester 3 Project module, 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 eight 10-credit and two 20 credit taught modules split equally across semesters one and two, taught in 4-week blocks with 20 credits modules panning 2 blocks) with 20 credits per block. In June students begin work on the 60-credit individual project which is submitted at the end of August.

The programme makes extensive use of industry-strength development tools and practices to give a hands-on experience of what is a very practical subject.

Programme regulations (link to on-line version)

Computer Science MSc (5055F) programme regulations

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
BCS, The Chartered Institute for IT

Additional Mechanisms

15 Regulation of assessment

Generic information regarding university provision is available at the following link.

Generic Information

The University Prospectus: http://www.ncl.ac.uk/undergraduate/degrees/#subject

Degree Programme and University Regulations: University Regulations | University Regulations | Newcastle University

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.