

Postgraduate Programme Specification

MSc Advanced Computer Science

This specification provides a summary of the main features of the programme and learning outcomes that a student might reasonably be expected to achieve and demonstrate where full advantage is taken of all learning opportunities offered. Further details on the learning, teaching and assessment approach for the programme and modules can be accessed on the University website and Virtual Learning Environment, GCU Learn. All programmes of the University are subject to the University's [Quality Assurance](#) processes.

1. GENERAL INFORMATION			
Programme Title	Master of Science in Advanced Computer Science		
Final Award	Master of Science in Advanced Computer Science		
Awarding Body	Glasgow Caledonian University		
School	SCEBE		
Department	Computing		
Mode of Study	Full-time Part-time ((For home students and students with immigration leave which permits study)		
Location of Delivery	Glasgow Campus London Campus		
UCAS Code			
Accreditations (PSRB)			
Period of Approval	From:	September 2025	To: August 2030

2. EDUCATIONAL AIMS OF PROGRAMME
The aim of this programme is to deliver the advanced knowledge and relevant in-depth practical skills in the rapidly expanding discipline of Computer Science. Students study and apply advanced techniques in programming and modern operating systems alongside modules that encompass a range of key topics in the discipline, including artificial intelligence, cloud computing, advanced human computer interaction and data storage & analytics. The programme has a strong employability focus with integration of support for industry: where appropriate modules will align with professional certifications related to AWS, MS Azure and Google Cloud Platform The programme combines the latest academic advances and provides practice in utilising the tools, techniques and design patterns used by industry professionals, to produce graduates that are intellectually and practically equipped for high quality relevant employment or capable of moving onwards to undertake related research. The programme philosophy and content are consistent-with and underpinned by professional and academic quality bodies, i.e., the BCS, ACM, IEEE and QAA, and it is intended that BCS accreditation will be sought. The programme is consistent with the University's 2030 Vision that aims to create employable graduates wanting to use their skills to make a positive difference to society.

3. LEARNING OUTCOMES

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas:

A: Knowledge and understanding;

- A1 Explain theoretical and practical concepts of Computer Science and their applications to complex and challenging real- world problems.
- A2 Critically compare processes, methods, techniques, tools and technologies and their application within the discipline of Computer Science
- A3 Evaluate a range of technology options to determine the most appropriate within software systems development processes
- A4 Understand the principles and processes involved in the architecture structure and development of software systems.
- A5 Evaluate advances in processes, methods, techniques and tools used to develop, evolve and support practice related to Computer Science

B: Practice: Applied knowledge, skills and understanding;

- B1 Demonstrate a comprehensive knowledge and deep understanding of the professional and ethical responsibilities for Computer Scientists.
- B2 Build on prior learning in the Computer Science or a closely related discipline to demonstrate a deep understanding of advanced concepts and practical application of Computer Science
- B3 Demonstrate a deep understanding of the concepts, architecture and practical application of Cloud Computing Platforms.
- B4 Demonstrate an understanding of the required theory, process and practice of applying artificial intelligence and machine learning to real world problems.
- B5 Demonstrate an understanding of the required theory, process and practice of applying advanced programming techniques to real world problems.
- B6 Apply and understand advanced concepts and techniques in modern computer operating systems.
- B7 Demonstrate deep knowledge and understanding of the concepts and application of Computer Science and design, conduct, and critically evaluate research by undertaking a Masters dissertation on a Computer Science-centred topic.
- B8 Practically apply appropriate and transferrable skills for the design and testing of solutions within Computing domains.
- B9 Demonstrate effective use of a variety of techniques, components, tools and environments in the design and development of sophisticated solutions within Computer Science domains.
- B10 Apply theory to practical and realistic career-related tasks.

C: Generic cognitive skills;

- C1 Identify, analyse and solve practical problems.
- C2 Plan, conduct and report on work.
- C3 Evaluate alternative design and implementation solutions.
- C4 Critically evaluate work undertaken by themselves and others.
- C5 Critically evaluate research and technical evidence from a variety of sources.
- C6 Creativity, innovation & independent thinking.

D: Communication, numeracy and ICT skills

- D1 Demonstrate appropriate communication skills: written, oral and listening.
- D2 Demonstrate numeric ability in Computer and Data Science applications

- D3 Demonstrate presentation skills to communicate complex technical information clearly and effectively
- D4 Develop good working practice within a design/development team.
- D5 Effective information retrieval and research skills.
- D6 Communicate complex technical information effectively in written forms

E: Autonomy, accountability and working with others.

- E1 Awareness of strengths and weaknesses/ Planning, monitoring, reviewing and evaluating own learning and development
- E2 Reliability, integrity, honesty and ethical awareness
- E3 Ability to prioritise tasks and time management
- E4 Appreciating and desiring the need for continuing professional development
- E5 Interpersonal skills, team working and leadership
- E6 Entrepreneurial independence and risk-taking
- E7 Commercial Awareness.
- E8 Self-confidence, self-discipline & self-reliance (independent working).

4. LEARNING AND TEACHING METHODS

The programme provides a variety of learning and teaching methods. Programme and Module specific guidance will provide detail of the learning and teaching methods specific to each module.

Across the programme the learning and teaching methods and approaches may include the following:

- Lectures
- Seminars
- Practical classes
- Placements
- Groupwork
- Flipped classroom approaches
- Online learning

The above approaches may be delivered either in person or online as appropriate and determined at module level by the Module Leader.

5. ASSESSMENT METHODS

The programme provides a variety of formative and summative assessment methods. Programme and Module specific guidance will provide detail of the assessment methods specific to each module.

Across the programme the assessment methods may include the following:

- Written coursework (essays, reports, case studies, dissertation, literature review)
- Oral coursework (presentations, structured conversations)
- Practical Assessment (assignments, lab exercises)
- Group work

- Blogs and Wikis
- Portfolio Presentations
- Class Tests

The above assessments may be delivered either in person and online as appropriate and determined at module level by the Module Leader.

6. ENTRY REQUIREMENTS

Specific entry requirements for this programme can be found on the prospectus and study pages on the GCU website at this location: www.gcu.ac.uk/study

The Course webpage specific to this Programme is:

<https://www.gcu.ac.uk/study/courses/msc-advanced-computer-science-multiple-locations>

All students entering the programme are required to adhere to the [GCU Code of Student Conduct](#).

7. PROGRAMME STRUCTURE AND AVAILABLE AND FINAL EXIT AWARDS¹

The following modules are delivered as part of this programme:

Module Code	Module Title	Core or Optiona l	SCQ F Leve l	Credit Size	Coursewor k %	Examinatio n %	Practica l %
MMI226823	Data Ethics and Research Methods	Core	11	15	70% & 30%		
MMI226824	Artificial Intelligence and Machine Learning	Core	11	15	50% & 50%		
MMI130764	Advanced Operating Systems	Core	11	15	50% & 50%		
MMI330759	Advanced Programming	Core	11	15	50% & 50%		
MMG527109	Advanced Topics in Human Computer Interaction	Core	11	15	100%		
MMI226816	Cloud Computing and Web Services	Core	11	15	50% & 50%		
MMI227050	Big Data Platforms	Core	11	15	50% & 50%		
MMI330760	Team Project	Core	11	15	100%		
MMG411931	Dissertation	Core	11	60	80% & 20%		

Students undertaking the programme on a full-time basis commencing in September of each year will undertake the modules in the order presented above.

This is subject to variation for students commencing the programme at other times of year (e.g. January) and/or undertaking the programme on a part-time mode of delivery. It will be possible for students to commence in Tri A (September), Tri B (January) or Tri C (May).

The following final and early Exit Awards are available from this programme²:

Postgraduate Certificate in Computing - *achieved upon successful completion of 60 credits*

¹ Periodically, programmes and modules may be subject to change or cancellation. Further information on this can be found on the GCU website here:

<https://www.gcu.ac.uk/currentstudents/essentials/policiesandprocedures>

² Please refer to the [GCU Qualifications Framework](#) for the minimum credits required for each level of award and the Programme Handbook for requirements on any specified or prohibited module combinations for each award.

Postgraduate Diploma in Advanced Computer Science - *achieved upon successful completion of 120 credits*

Master of Science in Advanced Computer Science - *achieved upon successful completion of 180 credits*

8. ASSESSMENT REGULATIONS

Students should expect to complete their programme of study under the GCU Assessment Regulations that were in place at the commencement of their studies on that programme, unless proposed changes to University Regulations are advantageous to students. These can be found at: <https://www.gcu.ac.uk/aboutgcu/services-and-facilities/qualityassuranceandenhancement/regulations-and-policies>

VERSION CONTROL (to be completed in line with AQPP processes)

Any changes to the PSP must be recorded below by the programme team to ensure accuracy of the programme of study being offered.

<i>Version Number</i>	<i>Changes/Updates</i>	<i>Date Changes/Updates made</i>	<i>Date Effective From</i>
1.0	New Approved Programme	May 2025	September 2025