University of Glasgow

Programme Specification[1]

1. Programmes:

Programme Title	UCAS GU Code Code
MSci in Software Engineering	G610 G610-2207
MSci in Software Engineering (Faster Route)	G600-2207

2. Attendance Type:

Full Time

2.1 SCQF Level:

11

2.2 Credits:

610

3. Awarding Institution:

University of Glasgow

4. Teaching Institutions:

5. College:

College of Science and Engineering

6. School/Institute:

Computing Science [REG30200000]

7. Programme Accredited By:

[1] This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if full advantage is taken of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each course can be found in course handbooks and other programme documentation and online at www.gla.ac.uk

The accuracy of the information in this document is reviewed periodically by the University and may be checked by the Quality Assurance Agency for Higher Education.

British Computer Society
IET (formerly IEE)

8. Entrance Requirements:

Please refer to the current undergraduate prospectus at:
http://www.gla.ac.uk/undergraduate/

8.1 ATAS Certificate Requirement:

ATAS Certificate not required

9. Programme Aims:

The focus of the Software Engineering degree is on topics directly relevant to the development of large and complex software systems. Initially this programme shares the fundamentals with the Computing Science Single Honours Degree. It becomes more specialised from year 3 with a focus on software design and implementation in the Team Project and subsequently in the choice of Level 4 Electives and Individual Project. This programme also includes a formally supervised and assessed industrial summer placement between Level 3 and Level 4.

This programme is an extension to the current Honours programme in Software Engineering, providing a full five year Masters programme offered as a first degree. It is designed as a research-oriented programme and thus features a research project in the 5th year of study, as well as other research-related taught material.

This degree programme aims to:
- provide students with a deep understanding of the theory and practice of computing;
- give students the opportunity to study a broad range of core computing science topics;
- encourage students to discover the connections among these topics and to understand their common theoretical foundations;
- produce graduates fit to occupy responsible positions in the information technology industry;
- expose students to software engineering in an industrial context via summer work placement;
- give students the opportunity to choose selected Software Engineering topics to study in considerable depth thereby equipping the best graduates to enter research programmes;
- emphasise unchanging principles in computing science;
- encourage independent study habits that will stand graduates in good stead throughout their professional careers;
- enable students to enhance their transferable and interpersonal skills, particularly written and oral communication and team working;
- develop research skills including an understanding of research methods and techniques reading and analysis of research papers in Software Engineering;
- enable students to prepare a research proposal and undertake a major research project in Software Engineering.

10. Intended Learning Outcomes of Programme:

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in areas listed below.

By the end of the programme, students will be able to:

Knowledge and Understanding
• demonstrate state-of-the-art knowledge and understanding of a range of topics in Computing Science;
• identify and debate the ethical, professional, and social issues raised by computerised information processing.

Skills and Other Attributes
Subject-specific/practical skills
• plan and execute a challenging and substantial Computing Science research project, to evaluate the work done, and to place that work in the context of other related work;
• summarise and review research papers in a variety of areas of Computing Science.

Intellectual skills
• learn independently;
• critically review the research work of others;
• solve challenging research problems;
• conduct independent research.

Transferable/key skills
   • highly developed oral and written communication skills.

11. Assessment Methods:

In the compulsory courses, assessment is by written paper reviews, an annotated bibliography, oral presentations, closed-book and open-book examinations. In the elective courses, assessment is by coursework and closed-book examinations. In the Research Proposal, assessment is by a written report. In the Research Project, assessment is by a research paper.

12. Learning and Teaching Approaches:

In the compulsory courses, teaching and learning are by lectures, reading, and seminars (some of which are student-led). In the elective courses, teaching and learning are by lectures, tutorials, reading, and (where appropriate) computing laboratory work.

In the Research Proposal, teaching and learning are by literature search, problem analysis, project planning, and report writing, under individual supervision. In the Research Project, teaching and learning are by independent research and dissertation writing, under individual supervision.

13. Relevant QAA Subject Benchmark Statements and Other External or Internal Reference Points:

The following web links introduce the benchmarks that are used to guide and assess our programmes. We monitor our courses against these on a regular basis, further information about this process and about recent developments in these benchmarks can be obtained direct from the school.
http://www.qaa.ac.uk/Publications/InformationAndGuidance/Pages/Subject-benchmark-statement-Computing.aspx
http://www.theiet.org/careers/profreg/
http://www.bcs.org/server.php?show=nav.7065

14. Programme Structure and Features:

Students who have not been admitted to the University on the MSci programme can apply to transfer to the programme at the end of semester 2 in level 4. Entry will be based on their academic performance.

A candidate for the MSci degree must obtain a minimum of 610 credits, 120 of which must be awarded at level M.

Levels 1 & 2 follow the same courses as the BSc Honours programme.

Level 1

There are three sets of courses currently offered at level 1. Either set enables students to continue to Honours level:

Set 1: aimed at students with prior programming experience:
Computing Science 1P (COMPSCI1001) (Level 1, 20 credits) (semesters 1 and 2)
Computing Science 1Q (COMPSCI1002) (Level 1, 20 credits) (semesters 1 and 2)
Other subjects (Level 1, 80 credits)

Set 2: aimed at students with no prior programming experience:
Computing Science 1CT (COMPSCI1016) (Level 1, 20 credits) (semester 1)
Computing Science 1PX (COMPSCI1017) (Level 1, 10 credits) (semester 2)
Computing Science 1S (COMPSCI1018) (Level 1, 10 credits) (semester 2)
Other subjects (Level 1, 80 credits)

Set 2: aimed at students with no prior programming experience:
Computing Science 1CT (COMPSCI1016) (Level 1, 20 credits) (semester 1)
Computing Science 1PX (COMPSCI1017) (Level 1, 10 credits) (semester 2)
Computing Science 1Q (COMPSCI1002) (Level 1, 20 credits) (semesters 1 and 2)

*Students will be strongly encouraged to include 40 credits of Level 1 Mathematics in year 1 or 2.

Level 2
Algorithmic Foundations (COMPSCI2003) (Level 2, 10 credits) (semester 1)
Computer Systems (COMPSCI2005) (Level 2, 10 credits) (semester 1)
Java Programming (COMPSCI2001) (Level 2, 10 credits) (semester 1)
Algorithms and Data Structures (COMPSCI2007) (Level 2, 10 credits) (semester 2)
Information Management (COMPSCI2006) (Level 2, 10 credits) (semester 2)
Object-Oriented Software Engineering (COMPSCI2008) (Level 2, 10 credits) (semester 2)
Other subjects (Level 1 or 2, 60 credits)

Computing Fundamentals (COMPSCI2002) (level 2, 10 credits) (semester 1) is required to be taken by any student who has done set 3 in level 1.

Level 3
Entry to the Honours years of the MSci programme is at the discretion of the Head of School of Computing Science. Entry to Software Engineering (SE3H) may be competitive due to the limited number of summer placements available. Entry will be guaranteed to students who have demonstrated exemplary programming skills during Levels 1 and 2 Computing Science. A grade point average of B3 in Java Programming 2, Object-Oriented Software Engineering 2 and Algorithms and Data Structures 2 and at least a grade point average of C3 (i.e. C average) overall of six Level 2 Computing Science courses is expected. The College of Science and Engineering has a minimum level of performance that must be met before a student may enter any Honours programme.

Students in Year 3 take a fixed curriculum designed to give breadth in the subject.
Advanced Programming (COMPSCI4010) (Level 3, 10 credits) (semester 1)
Algorithmics (COMPSCI4009) (Level 3, 10 credits) (semester 1)

Interactive Systems (COMPSCI4014) (Level 3, 10 credits) (semester 1)
Programming Languages (COMPSCI4016) (Level 3, 10 credits) (semester 1)
Database Systems (COMPSCI4013) (Level 3, 10 credits) (semester 2)
Distributed Information Management 3 (COMPSCI4048) (Level 3, 10 credits) (semester 2)
Networked Systems (COMPSCI4012) (Level 3, 10 credits) (semester 2)
Operating Systems (COMPSCI4011) (Level 3, 10 credits) (semester 2)
Professional Software Development (COMPSCI4015) (Level 3, 20 credits) (semesters 1 and 2)
Team Project H (COMPSCI4047) (Level 4, 20 credits) (semesters 1 and 2)

Summer between Years 3 and 4
Software Engineering Summer Placement (COMPSCI4046) (Level 3, 10 credits)

Level 4
Entry to the fourth year of the MSci programme is dependent on the student achieving an aggregate score of C3 at the end of their third year. MSci students in Year 4 take the same courses as for SE4H.

Software Engineering Honours students select eight 10-credit subject courses. They must select at least 40 credits from a specified Group of courses (listed below). These courses are designed to provide students with depth in a subject area.

Big Data: Programming and Management (COMPSCI4064) (Level 4, 10 credits) (semester 1)
Component Based Software Engineering (COMPSCI5056) (Level M, 10 credits) (semester 2)
Cyber Security (COMPSCI4062) (Level 4, 10 credits) (semester 2)
Enterprise Computing (COMPSCI5008) (Level M, 10 credits) (semester 1)
Human Computer Interaction (COMPSCI4023) (Level 4, 10 credits) (semester 1)
IT Architecture (COMPSCI5013) (Level M, 10 credits) (semester 2)
Safety Critical Systems (COMPSCI4045) (Level 4, 10 credits) (semester 1)
Software Engineering for Financial Systems (COMPSCI4067), (Level 4, 10 credits) (semester 2)

Also, from the eight courses, at least one must be:
Cyber Security (COMPSCI4062) (Level 4, 10 credits) (semester 2)
Human Centred Security (COMPSCI5060) (Level M, 10 credits) (semester 1)
Safety Critical Systems (COMPSCI4045) (Level 4, 10 credits) (semester 1)

This list will change from year to year, depending on staff availability and resources.

In addition, students undertake the following compulsory courses:
Individual Project (COMPSCI4025P) (Level 4, 30 credits) (semesters 1 and 2)
Professional Skills and Issues (COMPSCI4038) (Level 4, 10 credits) (semesters 1 and 2)

Level 5
Students admitted to the MSci in Software Engineering programme must normally achieve the admissions level of performance (average aggregate score of C3) in 4th year to be allowed to progress to the 5th year. Students failing to achieve the minimum level for progression will be assessed as if they were BSc Software Engineering students and will be awarded the appropriate BSc (Hons) Software Engineering qualification based on their results in years 3 & 4, using the normal weighting for the relevant BSc Software Engineering degree.

The students will be required to take the following courses:
Research Methods and Techniques (COMPSCI4065/COMPSCI5025) (Level 4/M, 10 credits) (semester 1)
(this course can be taken in either level 4 or 5)
Research Readings in Computing Science (COMPSCI5026) (Level M, 20 credits) (semester 1)
Research proposal, incl literature survey (COMPSCI5065) (Level M, 20 credits) (semester 1)
Advanced Research Readings in Computing Science (COMPSCI5003) (Level M, 10 credits) (semester 2)

Research project (COMPSCI5064P) (Level M, 60 credits) (semester 2)

Honours Assessment

Within each year, courses are weighted according to credits. The final Honours assessment combines the aggregated scores from levels 3, 4 and 5 in the ratio 20:30:50.

Alternative Faster Route entry (360 credits)

Students taking this route will come straight into level 2. They will take the following courses totalling 70 credits in Computing Science:

Algorithmic Foundations 2 (COMPSCI2003) (level 2, 10 credits) (semester 1)
Computing Fundamentals 2 (COMPSCI2002) (level 2, 10 credits) (semester 1)
Java Programming 2 (COMPSCI2001) (level 2, 10 credits) (semester 1)
Systems and Networks (COMPSCI4043) (level 4, 10 credits) (semester 1)
Algorithms and Data Structures 2 (COMPSCI2007) (level 2, 10 credits) (semester 2)
Information Management 2 (COMPSCI2006) (level 2, 10 credits) (semester 2)
Object Oriented Software Engineering 2 (COMPSCI2008) (level 2, 10 credits) (semester 2)
*other subjects from level 1 or 2, totalling 50 credits

It is strongly recommended that 40 credits of level 1 Mathematics are taken, unless the student has an equivalent mathematics qualification on entry.

Faster Route entry to Honours

Students will normally be admitted if they have a grade point average of at least C3 (i.e. C average) over all seven Computing Science courses, including a C3 or better in Java Programming 2, Algorithms and Data Structures 2 & Object-Oriented Software Engineering 2.

Note that from level 3 onwards, the Faster Route programme is exactly the same as the standard Honours programme.

For more information on courses see the course catalogue:
http://www.gla.ac.uk/coursecatalogue/

Regulations

This programme will be governed by the relevant regulations published in the University Calendar. These regulations include the requirements in relation to:
(a)   Award of the degree
(b)   Progress
(c)   Early exit awards
(d)   (For undergraduate programmes, where appropriate) Entry to Honours

http://www.gla.ac.uk/services/senateoffice/calendar/

15. Additional Relevant Information:

Support for students is provided by the Postgraduate/Undergraduate Adviser(s) of Studies supported by University resources such as the Effective Learning Adviser located in the Student Learning Service (www.gla.ac.uk/services/tls/sls/), the Student Counselling and Advisory Service (www.gla.ac.uk/services/counselling/), the Student Disability Service

(www.gla.ac.uk/services/studentdisability/) and the Careers Service (www.gla.ac.uk/services/careers/).

16. Academic Session:

2013-14

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