Programme Specification: Undergraduate

For students starting in Academic Year 2017/2018

1. Course Summary

Names of programme(s) and award title(s)	Master in Computer Science (MComp) Master in Computer Science with International Year (see Annex A for details) Master in Computer Science with Work Placement Year (see Annex B for details)
Award type	Integrated Masters
Mode of study	Full time
Framework of Higher Education Qualification (FHEQ) level of final award	Level 7
Duration	4 years 5 years with either the International Year or Work Placement Year between years 2 and 3
Location of study	Keele University – main campus
Accreditation (if applicable)	All three programmes are accredited by the Chartered Institute for IT (BCS)
Regulator	Office for Students (OfS)
Tuition Fees	**UK/EU students:** Fee for 2017/18 is £9,250* **International students:** Fee for 2017/18 is £15,250** The fee for the International Year is calculated at 15% of the standard year fee The fee for the Work Placement Year is calculated at 20% of the standard year fee
Additional Costs	Refer to section 18

How this information might change: *Please read the important information at http://www.keele.ac.uk/student-agreement/. This explains how and why we may need to make changes to the information provided in this document and to help you understand how we will communicate with you if this happens.*

** These fees are regulated by Government. We reserve the right to increase fees in subsequent years of study in response to changes in government policy and/or changes to the law. If permitted by such change in policy or law, we may increase your fees by an inflationary amount or such other measure as required by government policy or the law. Please refer to the accompanying Student Terms & Conditions. Further information on fees can be found at http://www.keele.ac.uk/studentfunding/tuitionfees/*

*** We reserve the right to increase fees in subsequent years of study by an inflationary amount. Please refer to the accompanying Student Terms & Conditions for full details. Further information on fees can be found at http://www.keele.ac.uk/studentfunding/tuitionfees/*

2. What is Integrated Masters programme?

Integrated master's awards - which are common in science, mathematics and engineering - are delivered through a programme that combines study at the level of a bachelor's degree with honours with study at master's level. As such, a student graduates with an integrated master's degree after a single four-year programme of study. The Integrated Masters programme described in this document builds upon the three year Single Honours programme by adding a fourth year in which students study modules in Computer Science at an advanced level.

3. Overview of the Programme

Master in Computer Science (MComp) is a programme for students with an interest in the application of computing to a wide range of problems. Computer systems are now vital to business, government, science and society, and there is much demand for graduates with the professional understanding and practical skills to harness software and hardware technologies to solve real-world problems, and develop the systems of the future. Many of the recent advances in these areas can be attributed to developments in computing, and this trend is likely to increase in speed and impact.

The four year MComp Programme enables students to devote their studies full-time to the tools, techniques and underpinning theories that make the science and technology so innovative and exciting. It provides the greatest breadth of learning in the subject, and has been developed to in accordance with the accreditation requirements of the British Computer Society (BCS).

The programme explores the theoretical underpinnings of the discipline and places an emphasis on practical computer programming and software development. There is no specific subject requirement for entry to the programme, and no previous experience of computing or computer programming is assumed. The programme does not involve an advanced level of mathematics, and any mathematical knowledge needed beyond that taught at GCSE is taught as part of the modules included in the programme.

4. Aims of the Programme

The broad aims of the programme are to:

- Develop your intellectual, practical and additional transferable skills such that you gain a sound academic grounding in the discipline of Computer Science and an understanding of the professional issues relevant to their future working lives;
- Include areas of teaching at the leading edge of the discipline, as informed by subject research, discipline and industry trends, and market requirements;
- Prepare you for further study or research, and for employment in industry, commerce or public service

The range of opportunities for graduates with computing skills continues to expand. Many of our graduates move into employment that is directly computing-related, for example as systems analysts, software engineers and consultants. A number of graduates go on to study for higher degrees in a wide range of subject areas, at Keele and elsewhere.

5. What you will learn

The intended learning outcomes of the programme (what students should know, understand and be able to do at the end of the programme), can be described under the following headings:

- Subject-related cognitive abilities and skills
- Subject-related practical abilities and skills
- Additional transferable skills (including employability skills)
- Master’s level knowledge, understanding and skills

Subject-related cognitive abilities and skills

Successful students will be able to demonstrate knowledge and understanding of:

- LO1.1 Computational thinking including its relevance to everyday life.
- LO1.2 The scientific method and its applications to problem solving in this area.
- LO1.3 Essential facts, concepts, principles and theories relating to Computing and computer applications as appropriate to the programme of study.
- LO1.4 Modelling: use such knowledge and understanding in the modelling and design of computer-based systems for the purposes of comprehension, communication, prediction and the understanding of trade-offs.
- LO1.5 Requirements, practical constraints and computer-based systems (and this includes computer systems, information security, embedded, and distributed systems) in their context: recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solutions.
- LO1.6 Critical evaluation and testing: analyse the extent to which a computer-0based system meets the criteria defined for its current use and future development.
- LO1.7 Methods and tool: deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer-based systems.
- LO1.8 Professional considerations: recognise the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.

Subject-related practical abilities and skills

Successful students will have the ability to:

- LO2.1 Specify, design and construct reliable, secure and usable computer-based systems.
- LO2.2 Evaluate systems in terms of quality attributes and possible trade-offs presented within the given problem.
- LO2.3 Plan and manage projects to deliver computing systems within constraints of requirements, timescale and budget.
- LO2.4 Recognise any risks and safety aspects that may be involved in the deployment of computing systems within a given context.
- LO2.5 Deploy effectively the tools used for the construction and documentation of computer applications, with particular emphasis on understanding the whole process involved in the effective deployment of computers to solve practical problems.
- LO2.6 Critically evaluate and analyse complex problems, including those with incomplete information, and devise appropriate solutions, within the constraints of a budget.

Additional transferable skills (including employability skills)

Successful students will have the opportunity to develop:

- LO3.1 A wide range of generic skills to ensure they become effective in the workplace, to the benefit of themselves, their employer and the wider economy.
- LO3.2 Intellectual skills: critical thing; making a case; numeracy and literacy; information literacy. The ability to construct well-argued and grammatically correct documents. The ability to locate and retrieve relevant ideas, and ensure these are correctly and accurately referenced and attributed.
- LO3.3 Self-management: self-awareness and reflection; goal setting and action planning; independence and adaptability; acting on initiative; innovation and creativity. The ability to work unsupervised, plan effectively and meet deadlines, and respond readily to changing situations and priorities.

LO3.4 Interaction: reflection and communication; the ability to succinctly present rational and reasoned arguments that address a given problem or opportunity, to a range of audiences (orally, electronically or in writing).

LO3.5 Team working and management: the ability to recognise and make best use of the skills and knowledge of individuals to collaborate. To be able to identify problems and desired outcomes and negotiate to mutually acceptable conclusions. To understand the role of a leader in setting direction and taking responsibility for actions and decisions.

LO3.6 Contextual awareness: the ability to understand and meet the needs of individuals, business and the community, and to understand how workplaces and organisations are governed.

LO3.7 Sustainability: recognising factors in environmental and societal contexts relating to the opportunities and challenges created by computing systems across a range of human activities.

Master's level knowledge, understanding and skills

Successful students will be able to:

- LO4.1 Demonstrate the ability to critically evaluate the technical, societal and management dimensions of computer systems
- LO4.2 Demonstrate the knowledge and understanding of advanced aspects of computer systems and their use
- LO4.3 Demonstrate the mastery of the practical methodology of the relevant area of computing, whether for general application in software development or in specialised applications relating to the storing, processing and communication of information
- LO4.4 Demonstrate the ability to assess systems (which may include software, devices, people, and so on), to recognise the individual components and to understand their interaction, to improve systems, to replace them and to create them
- LO4.5 Demonstrate familiarity with relevant codes of ethics and codes of practice, relevant industrial standards and principles underpinning the development of high integrity systems (for safety, security, trust, privacy, and so on), while keeping in focus the benefits of, approaches to and opportunities offered by innovation
- LO4.6 Demonstrate the ability to critically review the literature, which includes identifying all of the key developments in a particular area of study, critically analysing them and identifying limitations and avenues for further development or explanation

Keele Graduate attributes

Engagement with this programme will enable you to develop your intellectual, personal and professional capabilities. At Keele, we call these our ten Graduate Attributes and they include independent thinking, synthesizing information, creative problem solving, communicating clearly, and appreciating the social, environmental and global implications of your studies and activities. Our educational programme and learning environment is designed to help you to become a well-rounded graduate who is capable of making a positive and valued contribution in a complex and rapidly changing world, whichever spheres of life you engage in after your studies are completed.

Further information about the Keele Graduate Attributes can be found here: http://www.keele.ac.uk/journey/

6. How is the Programme taught?

Learning and teaching methods used on the programme vary according to the subject matter and level of the module. They include the following:

- **traditional lectures** providing students with detailed notes, often supported by copies of lecture slides in print or electronic form

- **practical sessions** in computer laboratories often supported by copies of laboratory instruction sheets
- **web-based learning** using the University's virtual learning environment (KLE)
- **tutorials** and **directed reading** on specific topics under the supervision of a member of academic staff
- **group project sessions** in which students develop a design for a software item to a level sufficient to allow implementation to follow

Apart from these formal activities, students are also provided with regular opportunities to talk through particular areas of difficulty, and any special learning needs they may have, with their Personal Tutors or module lecturers on a one-to-one basis.

These learning and teaching methods enable students to achieve the learning outcomes of the programme in a variety of ways. For example:

- lectures allow students to gain a systematic knowledge and understanding of computer science concepts and ideas and how to apply them to development of software and information systems
- web-based learning and directed reading allow students to develop their interest in computer science, their ability to reflect on their own learning and to take responsibility for its development
- group sessions enable students to develop their written and oral communication skills
- practical sessions and group work encourage students to work both independently and in collaboration with others as well as enabling them to solve problems in new or unfamiliar environments

7. Teaching Staff

The Computer Science academic staff currently comprises Professors, Readers, Senior Lecturers, Lecturers and Teaching Fellows, of whom a number are Associate Fellows, Fellows, and Senior Fellows of the Higher Education Academy. More information about the Computer Science staff is available at http://www.keele.ac.uk/scm/staff/

The University will attempt to minimise changes to our core teaching teams, however, delivery of the programme depends on having a sufficient number of staff with the relevant expertise to ensure that the programme is taught to the appropriate academic standard.

Staff turnover, for example where key members of staff leave, fall ill or go on research leave, may result in changes to the programme's content. The University will endeavour to ensure that any impact on students is limited if such changes occur.

8. What is the Structure of the Programme?

The academic year runs from September to June and is divided into two semesters. The number of weeks of teaching will vary from course to course, but you can generally expect to attend scheduled teaching sessions between the end of September and mid-December, and from mid-January to the end of April.

Our degree courses are organised into modules. Each module is usually a self-contained unit of study and each is usually assessed separately with the award of credits on the basis of 1 credit = 10 hours of student effort. An outline of the structure of the programme is provided in the tables below.

There are four types of module delivered as part of this programme. They are:

- Compulsory core module – a module that you are required to study on this course;
- Optional core module – these allow you some limited choice of what to study from a list of modules;
- Programme approved elective module – subject-related modules that count towards the number of subject credits required by your degree;
- Free-standing elective module – a free choice of modules that count towards the overall credit requirement but not the number of subject-related credits.

Year 1 (Level 4)

In the first year of study the emphasis is placed upon learning to design and write programs to solve problems. Students therefore study both the algorithmic aspects of programming and the use of data structures as a means

of incorporating data and knowledge within programs. In addition, they learn about some of the fundamental concepts in computing and the way in which humans interact with technology. Computer Science students also study how information systems are used in business and our every-day lives, and get a chance to apply their coding skills within the context of animation and multimedia development environments.

Core modules	Credits	Elective modules	Credits
Fundamentals of Computing	15	Cybercrime, or a free-standing elective module from another discipline	15
Programming I - Programming Fundamentals	15	A free-standing elective module from another discipline	15
Requirements, Evaluation and Professionalism	15		
Natural Computation	15		
Information Systems and Interaction	15		
Computer Animation and Multimedia	15		

The content of modules at Level 4 is informed by discipline and industry trends and market requirements, and the theoretical and practical requirements of Level 5 and 6 modules.

Level 4 of this programme consists of modules to the value of 120 credits. Discounting electives (of which all students must take two) there are no options at Level 4. However, formally, the Level 4 modules have the following co-requisites.

Module	Co-requisite
Fundamentals of Computing	none
Programming I - Programming Fundamentals	none
Cybercrime	none
Requirements, Evaluation and Professionalism	none
Natural Computation	none
Information Systems and Interaction	Fundamentals of Computing
Computer Animation and Multimedia	Programming I

Year 2 (Level 5)

The second year builds upon the foundation provided in the first year and introduces a number of different models for solving complex problems with computers, such as advanced programming techniques. Students also explore some of the professional and ethical issues in computing, and learn to develop sophisticated web applications and configure the servers on which these rely. MComp Computer Science students also study computational intelligence topics including evolutionary algorithms and neural networks, their use in vision systems and robotics.

Core modules	Credits	Elective modules	Credits
System Lifecycles and Design	15	Virtual Worlds	15
Programming II - Data Structures and Algorithms	15	A free-standing elective module from another discipline	15
Database Systems	15		
Mobile Application Development	15		
Computational Intelligence I	15		
Web Technologies	15		
Advanced Programming Practices	15		

The content of modules at Level 5 is informed by discipline and industry trends and market requirements, and the theoretical and practical requirements of Level 6 modules.

Level 5 of this programme consists of modules to the value of 120 credits. Discounting electives (of which all students must take one) there are no options at level two. However, formally, the Level 5 modules have the following precursors.

Module	Precursor
System Lifecycles and Design	Programming I Requirements, Evaluation and Professionalism
Programming II - Data Structures and Algorithms	Programming I
Database Systems	Fundamentals of Computing Programming I
Mobile Application Development	Programming I
Computational Intelligence I	Programming I
Web Technologies	Programming I
Advanced Programming Practices	Programming II (co-requisite)
Virtual Worlds	Programming I

The School has excellent links with local and national employers, and can help students arrange placements and other work experience by connecting them with these employers. A placement can take the form of a year in industry, between the second and third years of study, or can be for a shorter period over the summer vacation following the second year. However, placements are not a formal part of this course.

Year 3 (Level 6)

During the third year, students study a selection of more advanced and specialist topics. Each student also undertakes an individual project which continues across two semesters, culminating in a written dissertation.

Modules shown as “Option” are known as “optional core modules” and students choose from these to make up the required number of modules

Compulsory Core modules	Credits	Optional Core modules	Credits
30-credit Project	30	Software Engineering Project Management	15
		Advanced Information Systems	15
		Advanced Databases and Applications	15
		Games Computing	15
		Bioinformatics	15
		Computing in Education	15
		Computational and Artificial Intelligence II	15
		Communications and Networks	15
		Advanced Web Technologies	15

The content of modules at Level 6 reflects and is informed by the research interests of the teaching staff, discipline and industry trends and market requirements, giving students an opportunity to explore topics at the leading edge of the discipline.

Level 6 of this programme consists of modules to the value of 120 credits: one compulsory core module and six modules to be chosen from optional modules subject to timetable constraints. The Level 6 modules have the following precursors.

Module	Precursors
Software Engineering Project Management	Requirements, Evaluation and Professionalism System Lifecycles and Design
Advanced Information Systems	Information Systems and Interaction

	System Lifecycles and Design
Advanced Databases and Applications	Database Systems Web Technologies
Games Computing	Programming I plus any of Web Technologies, Mobile App. Development, Programming II, Virtual Worlds
30-credit Project	(Normal progression)
Computing in Education	Interview, Secured place
Computational and Artificial Intelligence II	Computational Intelligence I
Communications and Networks	(Normal progression)
Advanced Web Technologies	Web Technologies
Bioinformatics	(Normal progression)

Year 4 (Level 7)

During the final year, students study a selection of advanced and specialist topics. Each student also undertakes an individual MComp level project which takes place throughout the second semester of the year, culminating in a written dissertation following the format of research papers published in scientific journals.

Compulsory modules	**Credits**	**Optional modules**	**Credits**
Research Horizons	15	Distributed Intelligent Systems	15
Statistical Techniques for Data Analytics	15	Cloud Computing	15
MComp Project	60	User Interaction Design	15

The content of modules at Level 7 reflects and is informed by the research interests of the teaching staff, discipline and industry trends and market requirements, giving students an opportunity to explore topics at the leading edge of the discipline at an advanced level.

Level 7 of this programme consists of modules to the value of 120 credits: three compulsory core modules and two to be chosen from three available optional modules. The Level 7 modules have the following precursors.

Module	**Precursor**
Research Horizons	MComp progression
Statistical Techniques for Data Analytics	MComp progression
Distributed Intelligent Systems	MComp progression
User Interaction Design	MComp progression
MComp Project	MComp progression
Cloud Computing	MComp progression

For further information on the content of modules currently offered please visit:
www.keele.ac.uk/recordsandexams/az

Learning Outcomes

Subject Knowledge and Understanding		
Learning Outcome *Successful students will be able to demonstrate knowledge and understanding of:*	**Module in which this is delivered**	**Principal forms of assessment (of the Level Outcome) used**

Computational thinking including its relevance to everyday life.	All modules	Coursework and Examination
An understanding of the scientific method and its applications to problem solving in this area.	All modules	Coursework and Examination
Knowledge and understanding: demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to Computing and computer applications as appropriate to the programme of study.	All modules	Coursework and Examination
Modelling: use such knowledge and understanding in the modelling and design of computer-based systems for the purposes of comprehension, communication, prediction and the understanding of trade-offs.	All modules except Fundamentals of Computing and Computing in Education	Coursework and Examination
Requirements, practical constraints and computer-based systems (and this includes computer systems, information, security, embedded, and distributed systems) in their context: recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solutions.	All modules except Fundamentals of Computing and Computing in Education	Coursework and Examination
Critical evaluation and testing: analyse the extent to which a computer-based system meets the criteria defined for its current use and future development.	Requirements, Evaluation and Professionalism; Information Systems and Interaction; Database Systems; System Lifecycles and Design; Software Engineering Project Management; Advanced Information Systems; Advanced Web Technologies	Coursework and Examination
Methods and tools: deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer-based systems.	All modules except Fundamentals of Computing and Computing in Education	Coursework and Examination
Professional considerations: recognise the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.	All modules except Programming I - Programming Fundamentals; Fundamentals of Computing; Computer Animation and Multimedia; Natural Computation; Programming II - Data Structures & Algorithms; Advanced Programming Practices; Mobile Application Development; Web Technologies; Database Systems; Computational Intelligence I; Virtual Worlds; Communications and Networks; Games Computing; Computational and Artificial Intelligence II; Bioinformatics; Advanced Web Technologies	Coursework and Examination

Subject Specific Skills		
Learning Outcome *Successful students will have the ability to:*	**Module in which this is delivered**	**Principal forms of assessment (of the Level Outcome) used**
Specify, design and construct reliable, secure and usable computer-based systems.	All modules except Fundamentals of Computing, Natural Computation, Computational Intelligence I, Computational and Artificial Intelligence II, and Computing in Education Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework and Examination
Evaluate systems in terms of quality attributes and possible trade-offs presented within the given problem.	Requirements, Evaluation and Professionalism; Information Systems and Interaction; Mobile Application Development; Database Systems; System Lifecycles and Design; Software Engineering Project Management; Advanced Information Systems; 30 credit Project; Advanced Web Technologies Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework and Examination
Plan and manage projects to deliver computing systems within constraints of requirements, timescale and budget.	All modules except Fundamentals of Computing, Communications and Networks, and Computing in Education Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework and Examination
Recognise any risks and safety aspects that may be involved in the deployment of computing systems within a given context.	Cybercrime; Requirements, Evaluation and Professionalism; Advanced Programming Practices; Mobile Application Development; Web Technologies; Database Systems; System Lifecycles and Design; Communications and Networks; Software Engineering Project Management; Advanced Information Systems; Advanced Databases and Applications; 30 credit Project; Computing in Education; Advanced Web Technologies Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework and Examination

Deploy effectively the tools used for the construction and documentation of computer applications, with particular emphasis on understanding the whole process involved in the effective deployment of computers to solve practical problems.	All modules except Fundamentals of Computing, Communications and Networks, and Computing in Education Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework and Examination
Critically evaluate and analyse complex problems, including those with incomplete information, and devise appropriate solutions, within the constraints of a budget.	Cybercrime; Requirements, Evaluation and Professionalism; Information Systems and Interaction; Computer Animation and Multimedia; Natural Computation; Programming II - Data Structures & Algorithms; Advanced Programming Practices; Mobile Application Development; Web Technologies; Database Systems; System Lifecycles and Design; Virtual Worlds; Communications and Networks; Software Engineering Project Management; Advanced Information Systems; Advanced Databases and Applications; Games Computing; 30 credit Project; Advanced Web Technologies; Bioinformatics; Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework and Examination

Key or Transferable Skills		
Learning Outcome *Successful students will have the opportunity to develop:*	**Module in which this is delivered**	**Principal forms of assessment (of the Level Outcome) used**
A wide range of generic skills to ensure they become effective in the workplace, to the benefit of themselves, their employer and the wider economy.	All modules	Coursework and Examination
Intellectual skills: critical thinking; making a case; numeracy and literacy; information literacy. The ability to construct well argued and grammatically correct documents. The ability to locate and retrieve relevant ideas, and ensure these are correctly and accurately referenced and attributed.	Cybercrime; Requirements, Evaluation and Professionalism; Information Systems and Interaction; Mobile Application Development; Web Technologies; Database Systems; System Lifecycles and Design; Computational Intelligence I; Communications and Networks; Software Engineering Project Management; Advanced Information Systems; Advanced Databases and Applications; Games Computing; 30 credit Project; Computing in Education; Computational and Artificial Intelligence II; Advanced Web Technologies; Bioinformatics; Research Horizons; Statistical Techniques for Data Analytics; Distributed	Coursework and Examination

	Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	
Self-management: self-awareness and reflection; goal setting and action planning; independence and adaptability; acting on initiative; innovation and creativity. The ability to work unsupervised, plan effectively and meet deadlines, and respond readily to changing situations and priorities.	Requirements, Evaluation and Professionalism; Information Systems and Interaction; System Lifecycles and Design; Virtual Worlds; 30 credit Project; Computing in Education Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework and Examination
Interaction: reflection and communication: the ability to succinctly present rational and reasoned arguments that address a given problem or opportunity, to a range of audiences (orally, electronically or in writing).	All modules	Coursework and Examination
Team working and management: the ability to recognise and make best use of the skills and knowledge of individuals to collaborate. To be able to identify problems and desired outcomes and negotiate to mutually acceptable conclusions. To understand the role of a leader in setting direction and taking responsibility for actions and decisions.	Requirements, Evaluation and Professionalism; System Lifecycles and Design; Software Engineering Project Management; Advanced Information Systems; Computing in Education Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework and Examination
Contextual awareness: the ability to understand and meet the needs of individuals, business and the community, and to understand how workplaces and organisations are governed.	Cybercrime; Requirements, Evaluation and Professionalism; Information Systems and Interaction; Mobile Application Development; Web Technologies; Database Systems; System Lifecycles and Design; Virtual Worlds; Communications and Networks; Software Engineering Project Management; Advanced Information Systems; Advanced Databases and Applications; Computing in Education; Advanced Web Technologies Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework and Examination
Sustainability: recognising factors in environmental and societal contexts relating to the opportunities and challenges created by computing systems across a range of human	System Lifecycles and Design; Software Engineering Project Management; Advanced Information Systems; Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User	Coursework and Examination

activities.	Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	

Master's level knowledge, understanding and skills		
Learning Outcome *Successful students will have the opportunity to develop:*	**Module in which this is delivered**	**Principal forms of assessment (of the Level Outcome) used**
LO4.1 Demonstrate the ability to critically evaluate the technical, societal and management dimensions of computer systems.	MComp Project; Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework, Examination, and Dissertation and supporting materials
LO4.2 Demonstrate the knowledge and understanding of advanced aspects of computer systems and their use.	MComp Project; Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework, Examination, and Dissertation and supporting materials
LO4.3 Demonstrate the mastery of the practical methodology of the relevant area of computing, whether for general application in software development or in specialised applications relating to the storing, processing and communication of information.	MComp Project; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; Web Technologies and Security; Cloud Computing	Coursework, Examination, and Dissertation and supporting materials
LO4.4 Demonstrate the ability to assess systems (which may include software, devices, people, and so on), to recognise the individual components and to understand their interaction, to improve systems, to replace them and to create them.	MComp Project; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework, Examination, and Dissertation and supporting materials
LO4.5 Demonstrate familiarity with relevant codes of ethics and codes of practice, relevant industrial standards and principles underpinning the development of high integrity systems (for safety, security, trust, privacy, and so on), while keeping in focus the benefits of, approaches to and opportunities offered by innovation.	MComp Project; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing	Coursework, Examination, and Dissertation and supporting materials
LO4.6 Demonstrate the ability to critically review the literature,	MComp Project; Research and Consultancy Skills; Research	Coursework and Dissertation and supporting materials

which includes identifying all of the key developments in a particular area of study, critically analysing them and identifying limitations and avenues for further development or explanation.	Horizons	

Module Topics

The course has been developed in line with BCS accreditation requirements that an integrated master's degree provides breadth and depth in the area of computing and be influenced by relevant research, industry and market requirements, with adequate theoretical underpinning. The ACM CS2013 Curriculum Guidance for Undergraduate Programmes in Computer Science provides a "Body of Knowledge" seen as defining the scope of the broad area of computing. This is considered also in the context of the QAA 2015 Benchmark Statement for Master's degrees in Computing. This "Body of Knowledge" is not intended to define curricula or syllabi. The table below shows which modules contribute to each topic from the Body of Knowledge.

Body of Knowledge topic	Modules contributing to the topic
Algorithms and Complexity	Programming I - Programming Fundamentals; Fundamentals of Computing; Cybercrime; Information Systems and Interaction; Computer Animation and Multimedia; Natural Computation; Programming II - Data Structures & Algorithms; Advanced Programming Practices; Mobile Application Development; Web Technologies; Database Systems; Computational Intelligence I; Virtual Worlds; Communications and Networks; Software Engineering Project Management; Advanced Information Systems; Advanced Databases and Applications; Games Computing; Computational and Artificial Intelligence II; Bioinformatics; Advanced Web Technologies; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing
Architecture and Organisation	Fundamentals of Computing; Cybercrime; Information Systems and Interaction; Communications and Networks Statistical Techniques for Data Analytics; Distributed Intelligent Systems; Web Technologies and Security; Cloud Computing
Computational Science	Programming I - Programming Fundamentals; Fundamentals of Computing; Cybercrime; Requirements, Evaluation and Professionalism; Information Systems and Interaction; Computer Animation and Multimedia; Natural Computation; Programming II - Data Structures & Algorithms; Advanced Programming Practices; Mobile Application Development; Web Technologies; Database Systems; System Lifecycles and Design; Computational Intelligence I; Communications and Networks; Virtual Worlds; Software Engineering Project Management; Advanced Information Systems; Advanced Databases and Applications; Games Computing; 30 credit Project; Computing in Education; Computational and Artificial Intelligence II; Advanced Web Technologies; Bioinformatics; Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing
Discrete Structures	Programming I - Programming Fundamentals; Fundamentals of Computing; Natural Computation; Programming II - Data Structures & Algorithms; Advanced Programming Practices; Mobile Application Development; Web Technologies; Database Systems; Communications and Networks; Advanced Databases and Applications; Games

	Computing; Advanced Web Technologies; Bioinformatics; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; Web Technologies and Security; Cloud Computing
Graphics and Visualisation	Fundamentals of Computing; Computer Animation and Multimedia; Virtual Worlds; Games Computing; Bioinformatics Statistical Techniques for Data Analytics; User Interaction Design; Research and Consultancy Skills; MComp Project
Human-Computer Interaction	Fundamentals of Computing; Requirements, Evaluation and Professionalism; Information Systems and Interaction; Mobile Application Development; Web Technologies; Advanced Information Systems; Games Computing; Advanced Web Technologies User Interaction Design; Web Technologies and Security; Cloud Computing
Information Assurance and Security	Cybercrime; Requirements, Evaluation and Professionalism; System Lifecycles and Design; Communications and Networks; Advanced Databases and Applications; Advanced Web Technologies Web Technologies and Security; Cloud Computing
Information Management	Fundamentals of Computing; Information Systems and Interaction; Database Systems; Advanced Information Systems; Advanced Databases and Applications; Advanced Web Technologies Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; Web Technologies and Security; Cloud Computing
Intelligent Systems	Information Systems and Interaction; Natural Computation; Computational Intelligence I; Advanced Information Systems; Computational and Artificial Intelligence II; Distributed Intelligent Systems; Cloud Computing
Networking and Communications	Fundamentals of Computing; Cybercrime; Communications and Networks Research Horizons; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; Research and Consultancy Skills; Web Technologies; Cloud Computing
Operating Systems	Fundamentals of Computing; Cloud Computing
Platform-based Development	Information Systems and Interaction; Computer Animation and Multimedia; Mobile Application Development; Web Technologies; Database Systems; Virtual Worlds; Games Computing; Advanced Web Technologies Statistical Techniques for Data Analytics; Distributed Intelligent Systems; Web Technologies and Security; Cloud Computing
Parallel and Distributed Computing	Advanced Programming Practices; Communications and Networks; Advanced Databases and Applications; Games Computing Distributed Intelligent Systems; Web Technologies and Security; Cloud Computing
Programming Languages	Programming I - Programming Fundamentals; Programming II - Data Structures & Algorithms; Advanced Programming Practices; Statistical Techniques for Data Analytics; Distributed Intelligent Systems; MComp Project; Web Technologies and Security; Cloud Computing
Software Development Fundamentals	Programming I - Programming Fundamentals; Fundamentals of Computing; System Lifecycles and Design; Games Computing; Bioinformatics;
Software Engineering	Requirements, Evaluation and Professionalism; Programming II - Data Structures & Algorithms; Advanced Programming Practices; Mobile Application Development; Web Technologies; Database Systems; System

	Lifecycles and Design; Software Engineering Project Management; Games Computing; Advanced Web Technologies Statistical Techniques for Data Analytics; Distributed Intelligent Systems; User Interaction Design; Research and Consultancy Skills; Web Technologies and Security; Cloud Computing
Systems Fundamentals	Requirements, Evaluation and Professionalism; Information Systems and Interaction; Mobile Application Development; System Lifecycles and Design; Distributed Intelligent Systems; Research and Consultancy Skills; Cloud Computing
Social Issues and Professional Practice	Cybercrime; Requirements, Evaluation and Professionalism; Information Systems and Interaction; System Lifecycles and Design; Software Engineering Project Management; Advanced Information Systems; 30 credit Project; Computing in Education User Interaction Design; MComp Project; Research and Consultancy Skills; Web Technologies and Security

9. Final and intermediate awards

Credits required for each level of academic award are as follows:

Master in Computing Degree	480 credits	You will require at least 120 credits at levels 4, 5, 6 and 7 You must accumulate at least 435 credits in Computer Science (out of 480 credits overall), with at least 90 credits in Level 4, 105 credits in Level 5, 120 credits in Level 6, and 120 credits in Level 7, to graduate with a named integrated master's degree in Computer Science.
Honours Degree	360 credits	You will require at least 120 credits at levels 4, 5 and 6 You must accumulate at least 315 credits in Computer Science (out of 360 credits overall), with at least 90 credits in Level 4, 105 credits in Level 5 and 120 credits in Level 6, to graduate with a named single honours degree in Computer Science.
Diploma in Higher Education	240 credits	You will require at least 120 credits at level 4 or higher and at least 120 credits at level 5 or higher
Certificate in Higher Education	120 credits	You will require at least 120 credits at level 4 or higher

Master in Computer Science with International Year: in addition to the above students must pass a module covering the international year in order to graduate with a named degree in Computer Science with International Year. Students who do not complete, or fail the international year, will be transferred to the four-year Computer Science programme.

Master in Computer Science with Work Placement Year: in addition to the above students must pass CSC-30024, the non-credit bearing module covering the work placement year, in order to graduate with the 'with work placement year' version of the Computer Science degree. Students who do not complete or fail the work placement year will be transferred to the four-year Computer Science programme. Failure of the work placement year will be recorded on a student's final transcript.

10. How is the Programme assessed?

The wide variety of assessment methods used within Computing at Keele reflects the broad range of knowledge and skills that are developed as you progress through the degree programme. Teaching staff pay particular attention to specifying clear assessment criteria and providing timely, regular and constructive feedback that helps to clarify things you did not understand and helps you to improve your performance. The following list is representative of the variety of assessment methods used within Computing:

- **Unseen examinations** in different formats test a student's knowledge and understanding of computer science topics. Such examinations are of two hours in length and contain compulsory and possibly also optional questions

- **Class tests** are taken during the course of a module, usually in a lecture slot. They are intended to assess a student's current understanding and subject knowledge in that module in a structured and focused manner. Some taught compulsory modules may have class tests as part of the assessment profile

- **Coursework** normally consists of assignments designed to assess student's knowledge and understanding of the module material. Some of these assignments may be computer based; others take the form of individual reports, essays or group projects

- **Short reports:** for which students are required to write up their own account of small group studies and discussions on particular topics

- **Tutorial Participation**, whereby students may be asked to make contributions based on the subject material, either orally or as a written solution, sometimes in consultation with their peers

- **Dissertations** are formal reports of work carried out by students undertaking a project. Projects involve the integration and application of theoretical knowledge and problem-solving skills to an identified programming need and/or research problem within the discipline. Dissertations describe product and process in extended detail

Marks are awarded for summative assessments designed to assess your achievement of learning outcomes. You will also be assessed formatively to enable you to monitor your own progress and to assist staff in identifying and addressing any specific learning needs. Feedback, including guidance on how you can improve the quality of your work, is also provided on all summative assessments within three working weeks of submission, unless there are compelling circumstances that make this impossible, and more informally in the course of tutorial and seminar discussions.

11. Contact Time and Expected Workload

This contact time measure is intended to provide you with an indication of the type of activity you are likely to undertake during this programme. The data is compiled based on module choices and learning patterns of students on similar programmes in previous years. Every effort is made to ensure this data is a realistic representation of what you are likely to experience, but changes to programmes, teaching methods and assessment methods mean this data is representative and not specific.

Undergraduate courses at Keele contain an element of module choice; therefore, individual students will experience a different mix of contact time and assessment types dependent upon their own individual choice of modules. The figures below are an example of activities that a student may expect on your chosen course by year/stage of study. Contact time includes scheduled activities such as: lecture, seminar, tutorial, project supervision, demonstration, practical classes and labs, supervised time in labs/workshop, fieldwork and external visits. The figures are based on 1,200 hours of student effort each year for full-time students.

Activity	Year 1 (Level 4)	Year 2 (Level 5)	Year 3 (Level 6)	Year 4 (Level 7)
Scheduled learning and teaching activities	27%	29%	16%	23%
Guided independent Study	73%	71%	84%	77%
Placements	0%	0%	0%	0%

12. Accreditation

The Master in Computer Science (MComp) and Master in Computer Science with International Year programmes are accredited by the Chartered Institute for IT (BCS).

13. Regulations

The University Regulations form the framework for learning, teaching and assessment and other aspects of the student experience. Further information about the University Regulations can be found at: http://www.keele.ac.uk/student-agreement/

Computer Science Regulations

Transfer onto and off the MComp Programme

Regulation 1F, paragraph 2.1 states that the rules governing eligibility for transfer onto an Integrated Masters programme shall be governed by the relevant Course Regulations.

Single Honours BSc Computer Science students will be permitted to transfer onto the MComp Programme at any point up to the end of Level 5, subject to having met any relevant progression criteria and, in any event, only with the approval of the Programme Director. Dual Honours BSc Computer Science students will, subject to the same considerations, normally be permitted to transfer on to the MComp Programme with in two weeks of the commencement of Level 5.

MComp students will be permitted to transfer to an approved Computer Science Bachelors programme at any point up to the end of week eight of the second semester of Level 6.

(International students only) Due to the UK Home Office Visa restrictions, students who enrol on the MComp programme are not able to transfer to the BSc Computer Science level at any point during the course apart from at the level 6 boards, where a student would exit and complete with an award of BSc Computer Science. If an international student wishes or is required to transfer to the BSc Computer Science they will need to apply for a new Visa from outside the UK at their own cost before the switch could be completed. Students who find themselves in these circumstances will need to speak to International Student Support (Student Services Centre) to go over the consequences of the transfer and the timings of a new Visa application from outside the UK.

Study Abroad (semester abroad)

Students intending to study abroad must pass all modules in their first year and obtain an average of at least 50%. The school can insist that no placement is made if a student's progress is not of a satisfactory standard.

Students spending a semester abroad during their second year of study must agree a programme with the Study Abroad Tutor (SAT) before they leave and must agree any subsequent changes that become necessary.

Marks obtained will be converted into Keele equivalents according to the agreement between Keele and the partner institution. In the case of borderline marks or incomplete work, the Computer Science examination board will determine the mark to be awarded. In the event of unfinished modules, the Director of Learning and Teaching or Study Abroad Tutor may require extra work to be completed.

A student who has completed a semester abroad will not normally be eligible to transfer onto the International Year option.

14. What are the typical admission requirements for the programme?

Subject	A-level	Subjects not included	International Baccalaureate	BTEC	Access to Higher Education Diploma	GCSE requirements
Computer Science (MComp)	ABB	General Studies and	34 points	DDM	Obtain Access to Higher Education	Maths @ C (or 4) English Language

Undergraduate Masters (Single Honours)		Critical Thinking			Diploma with 30 Level 3 credits at Distinction and 15 Level 3 credits at Merit	@ C (or 4)

Applicants who are not currently undertaking any formal study or who have been out of formal education for more than 3 years and are not qualified to A-level or BTEC standard may be offered entry to the University's Foundation Year Programme.

Applicants for whom English is not a first language must provide evidence of a recognised qualification in English language. The minimum score for entry to the Programme is Academic IELTS 6.0 or equivalent.

Please note: All non-native English speaking students are required to undertake a diagnostic English language assessment on arrival at Keele, to determine whether English language support may help them succeed with their studies. An English language module may be compulsory for some students during their first year at Keele.

Accreditation of Prior Learning (APL) is considered on a case-by-case basis and those interested should contact the Programme Director. The University's guidelines on this can be found here:
http://www.keele.ac.uk/qa/accreditationofpriorlearning/

15. How are students supported on the programme?

Support for student learning on the Programme is provided in the following ways:

- Module lecturers, teaching fellows and computing laboratory demonstrators are responsible for providing support for learning on the modules. They also give individual feedback on coursework assignments and more general feedback on examinations. Students do not normally need to make a formal appointment to meet a member of staff. Some staff have dedicated office hours when they guarantee to be in their room and available for enquiries. Other staff have an open door policy, which means students can drop in at any time.
- Every student is allocated to a Personal Tutor who is responsible for reviewing and advising on students' academic progress in Computer Science.
- Personal Tutors also act as a first point of contact for students on non-academic issues which may affect their learning and can refer students on to a range of specialist health, welfare and financial services co-ordinated by the University's Centre for Learning and Student Support.

16. Learning Resources

Computer Science is taught in lecture theatres, teaching rooms and computer laboratories. The learning resources available to students on the Programme include:

- Dedicated networked PC laboratories within the School of Computing and Mathematics, which use the Microsoft Windows and GNU/Linux operating systems and provide a wide range of supported software. The School buildings are accessible 24 hours a day. Students have individual email accounts and file stores on University and School servers. Additional facilities are provided for final year projects.
- The Keele Learning Environment (KLE) which provides easy online access to a range of learning resources including lecture notes and other resources supplied in modules.
- The extensive collection of books and journals relevant to undergraduate study held in the University Library. Much of this material is also accessible online to Keele students from anywhere in the world with a University username and password.

17. Other learning opportunities

Study abroad (semester)

Students on the MComp Computer Science programme have the potential opportunity to spend a semester abroad in their second year studying at one of Keele's international partner universities.

Exactly which countries are available depends on the student's choice of degree subjects. An indicative list of countries is on the website (http://www.keele.ac.uk/studyabroad/partneruniversities/); however this does not guarantee the availability of study in a specific country as this is subject to the University's application process for studying abroad.

No additional tuition fees are payable for a single semester studying abroad but students do have to bear the costs of travelling to and from their destination university, accommodation, food and personal costs. Depending on the destination they are studying at additional costs may include visas, study permits, residence permits, and compulsory health checks. Students should expect the total costs of studying abroad to be greater than if they study in the UK, information is made available from the Global Education Team throughout the process, as costs will vary depending on destination

Whilst students are studying abroad any Student Finance eligibility will continue, where applicable students may be eligible for specific travel or disability grants. Students studying in Erasmus+ destinations may be eligible for grants as part of this programme. Students studying outside of this programme may be eligible for income dependent bursaries at Keele.

Students travel on a comprehensive Keele University insurance plan, for which there are currently no additional charges. Some governments and/or universities require additional compulsory health coverage plans; costs for this will be advised during the application process.

Students considering study abroad should be aware that because of the nature of the discipline, it is difficult to find appropriate matching modules in other countries. Any student considering study abroad is strongly advised to take specific advice from appropriate members of staff such as the Study Abroad Tutor as early as possible.

Study Abroad (International Year)

A summary of the International Year, which is a potential option for students after completion of year 2 (Level 5), is provided at Annex A.

Work Placement Year

A summary of the Work Placement Year, which is a potential option for students after completion of year 2 (Level 5), is provided at Annex B.

18. Additional costs

Computer Science Programme Additional Costs

Some travel costs may be incurred if an external project is undertaken. However, any such costs would be discussed with you before the project was selected. It would be possible for you to select an internal project that would not incur any additional costs.

'Computing in Education' is an optional third year module which involves students spending one day a week supporting a teacher in a local school or college, over at least 16 weeks. A DBS check will be required in order to take the module, and this currently costs £44. Travel will be required, depending on the location of the school or college you choose. The costs of both of these would be incurred by the student and cannot be reimbursed by the university. It is possible to select alternative modules, which do not incur any cost.

These costs have been forecast by the University as accurately as possible but may be subject to change as a result of factors outside of our control (for example, increase in costs for external services). Forecast costs are reviewed on an annual basis to ensure they remain representative. Where additional costs are in direct control of the University we will ensure increases do not exceed 5%.

As to be expected there will be additional costs for inter-library loans and potential overdue library fines, print and graduation.

We do not anticipate any further additional costs for this undergraduate programme.

19. Quality management and enhancement

The quality and standards of learning in Computer Science are subject to a continuous process of monitoring, review and enhancement.

- The Learning and Teaching Committee of the School of Computing and Maths is responsible for reviewing and monitoring quality management and enhancement procedures and activities across the School.
- Individual modules and the Computer Science Programme as a whole are reviewed and enhanced every year in the annual programme review which takes place at the end of the academic year and as part of the University's Curriculum Annual Review and Development (CARD) process.
- The School operates a process of peer observation of teaching, whereby members of academic staff critically evaluate the teaching of one another.
- Continuous Professional Development is available to all staff.
- The programmes are run in accordance with the University's Quality Assurance procedures and are subject to periodic reviews under the Internal Quality Audit (IQA) process.

Student evaluation of, and feedback on, the quality of learning on every Computer Science module takes place every year using a variety of different methods:

- The results of student evaluations of all modules are reported to module leaders and reviewed by the Programme Committee as part of the Curriculum Annual Review and Development (CARD) process.
- Findings related to the Computer Science Programmes from the annual National Student Survey (NSS), and from regular surveys of the student experience conducted by the University, are subjected to careful analysis and a planned response at programme and School level.
- Feedback received from representatives of students in all three years of the Computer Science Programme is considered and acted on at regular meetings of the Computer Science Undergraduate Programme Committee.

In addition to this, the quality and standards of teaching are regularly discussed and monitored by the Computer Science Undergraduate Programme Committee and by the School Learning and Teaching Committee.

The University appoints senior members of academic staff from other universities to act as external examiners on all programmes. They are responsible for:

- Approving examination questions
- Confirming all marks which contribute to a student's degree
- Reviewing and giving advice on the structure and content of the programme and assessment procedures

Information about current external examiner(s) can be found here:
http://www.keele.ac.uk/qa/externalexaminers/currentexternalexaminers/

20. The principles of programme design

The Computer Science Programmes described in this document have been drawn up with reference to, and in accordance with the guidance set out in, the following documents:

a. UK Quality Code for Higher Education, Quality Assurance Agency for Higher Education: http://www.qaa.ac.uk/quality-code

b. QAA Subject Benchmark Statement: Computing (2016) http://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-computing-16.pdf?sfvrsn=26e1f781_10

c. QAA Subject Benchmark Statement: Masters degrees in Computing (2011) http://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-masters-degree-computing.pdf?sfvrsn=c490f681_16

d. Guidelines for programmes, British Computer Society, 2009. http://www.bcs.org/upload/pdf/heaguidelines.pdf

e. Accreditation criteria, British Computer Society, 2010. http://www.bcs.org/category/5844, http://www.bcs.org/upload/pdf/criteria.pdf

f. Keele University Regulations and Guidance for Students and Staff: http://www.keele.ac.uk/regulations

g. Keele University Placement Learning Code of Practice: https://www.keele.ac.uk/policyzone/viewbyowner/studentandacademicservices/name,117421,en.php

21. Document Version History

Version history	Approved Date	Notes
Date first created	October 2016	
Revision history	V2.0: 02/2017	Remove CSY-30002 Electronic Commerce optional module - content no longer current [minor change]
	V3.0: 08/2017	Remove CSC-10033 Systems and Architecture; CSC-20024 Virtual Worlds; CSC-30023 Evolution of Complex Systems [minor change – optional modules]
	V4.0: 02/2018	Updated to reflect module option offering for 2018-19: replaced Level 7 Core module CSC-40037 Problem Solving Skills for Consultants with CSC-40050 Research and Consultancy Skills [major - reissued]
	V4.1: 08/2018	Clarification included in the Course Regulations section about the restrictions on course transfer for International students due to UK Visa & Immigration rules
	V4.2: 08/2018	Updated to reflect change in pre-requisites for CSY-30001 and CSC-20022 [minor]
	V5.0: 03/2019	Updated to reflect changes to Level 6 and 7 modules. Updated to reflect BCS accreditation. Updated to include work placement year.
Date approved	FLTC 03/02/17 FLTC 11/05/18	

Annex A for Single Honours Programmes

International Year Programme

Students registered for Single Honours MComp Integrated Masters may either be admitted for or apply to transfer during their period of study at Level 5 to the Single Honours MComp Integrated Masters with International Year'. Students accepted onto this programme will have an extra year of study (the International Year) at an international partner institution after they have completed Year 2 (Level 5) at Keele.

Students who successfully complete both the second year (Level 5) and the International Year will be permitted to progress to Level 6. Students who fail to satisfy the examiners in respect of the International Year will normally revert to the MComp Integrated Masters and progress to Level 6 on that basis. The failure will be recorded on the student's final transcript.

Study at Level 4, Level 5 and Level 6 will be as per the main body of this document. The additional detail contained in this annex will pertain solely to students registered for MComp Integrated Masters with International Year'.

International Year Programme Aims

In addition to the programme aims specified in the main body of this document, the international year programme of study aims to provide students with:

1. Personal development as a student and a researcher with an appreciation of the international dimension of their subject
2. Experience of a different culture, academically, professionally and socially.

Entry Requirements for the International Year

Students may apply to the 4-year programme during Level 5. Admission to the International Year is subject to successful application, interview and references from appropriate staff.

The criteria to be applied are:

- Academic Performance (an average of 60% across all modules at Level 5 is normally required)
- General Aptitude (to be demonstrated by application for study abroad, interview during the 2nd semester of year 2 (Level 5), and by recommendation of the student's personal tutor, 1st and 2nd year tutors and programme director)

Student Support

Students will be supported whilst on the International Year via the following methods:

- Phone or Skype conversations with Study Abroad tutor, in line with recommended Personal Tutoring meeting points.
- Support from the University's Global Education Team.

Learning Outcomes

In addition to the learning outcomes specified in the main text of the Programme Specification, students who complete a Keele undergraduate programme with International Year will be able to:

a. Describe, discuss and reflect upon the cultural and international differences and similarities of different learning environments
b. Discuss the benefits and challenges of global citizenship and internationalisation
c. Explain how their perspective on their academic discipline has been influenced by locating it within an international setting.

In addition, students who complete MComp Integrated Masters with International Year' will be able to:

i) communicate effectively in an international setting;
ii) reflect on previous learning within an international context.

These learning outcomes will all be assessed by the submission of a satisfactory individual learning agreement, the successful completion of assessments at the partner institution and the submission of the reflective portfolio element of the international year module.

Course Regulations

Students registered for the 'MComp Integrated Masters with International Year' are subject to the course specific regulations (if any) and the University regulations. In addition, during the International Year, the following regulations will apply:

Students undertaking the International Year must complete 120 credits, which must comprise *at least 40%* in the student's discipline area.

This may impact on your choice of modules to study, for example you will have to choose certain modules to ensure you have the discipline specific credits required.

Students are barred from studying any Computer Science module with significant overlap to Level 6 modules to be studied on their return. Significant overlap with Level 5 modules previously studied should also be avoided.

Additional costs for the International Year

Tuition fees for students on the International Year will be charged at 15% of the annual tuition fees for that year of study, as set out in Section 1. The International Year can be included in your Student Finance allocation, to find out more about your personal eligibility see: www.gov.uk

Students will have to bear the costs of travelling to and from their destination university, accommodation, food and personal costs. Depending on the destination they are studying at additional costs may include visas, study permits, residence permits, and compulsory health checks. Students should expect the total costs of studying abroad be greater than if they study in the UK, information is made available from the Global Education Team throughout the process, as costs will vary depending on destination.

Students studying in Erasmus+ destinations may be eligible for grants as part of this programme. Students studying outside of this programme may be eligible income dependent bursaries at Keele.

Students travel on a comprehensive Keele University insurance plan, for which there are currently no additional charges. Some Governments and/or universities require additional compulsory health coverage plans; costs for this will be advised during the application process.

Annex B

Master in Computer Science with Work Placement Year

Work Placement Year summary
Students registered for the Master in Computer Science may either be admitted for or apply to transfer during their studies to the 'Master in Computer Science with Work Placement Year'. Students accepted onto this programme will have an extra year of study (the Work Placement Year) with a relevant placement provider after they have completed Year 2 (Level 5) at Keele. Students who successfully complete both the second year (Level 5) and the Work Placement Year will be permitted to progress to Level 6. Students who fail to satisfactorily complete the Work Placement Year will normally revert to the 4-year Master in Computer Science programme and progress to Level 6 on that basis. The failure will be recorded on the student's final transcript. Study at Level 4, Level 5 Level 6 and Level 7 will be as per the main body of this document. The additional detail contained in this annex will pertain solely to students registered for 'Master in Computer Science with Work Placement Year'.
Work Placement Year Programme Aims
In addition to the programme aims specified in the main body of this document, the Work Placement Year aims to provide students with the opportunity to carry out a long-term work-based learning experience (minimum 30 weeks equivalent of full-time work) in the computing sector between Years 2 and 3 (Levels 5 and 6) of their degree programme. The module will be underpinned by employability skills training (as part of their preparation during year 2), reflective assessment, employer and tutor evaluation and support from academic tutors.
Entry Requirements for the Work Placement Year
All students undertaking the work placement degree programme will be provided with an academic tutor, based at Keele. Students are expected to arrange their own work placement. A list of potential placements will be provided that students can apply for, with allocation being based on a competitive interview process involving the placement providers. Students are also permitted to provide their own placement option. Support will be offered throughout the placement process. This will involve support ensuring the appropriateness of the placement prior to starting the Placement Year, and email/telephone/face-to-face contact with the academic tutor. Students have the opportunity to apply directly for the 4-year 'with work placement year' degree programme, or to transfer onto the 4-year programme at the end of Year-1 and in Year-2 at the end of Semester 1. Students who are initially registered for the 4-year degree programme may transfer onto the 3-year degree programme at any point in time, prior to undertaking the year-long work placement. Students who fail to pass the work placement year, and those who fail to meet the minimum requirements of the work placement year module (minimum 30 weeks full time (1,050 hours), or equivalent, work placement), will be automatically transferred onto the 3-year degree programme. The criteria to be applied are: • A good University attendance record and be in 'good academic standing'. • Passed all Year-1 and Year-2 Semester 1 modules with an overall module average of > 55% • Students undertaking work placements will be expected to complete a Health and Safety checklist prior to commencing their work experience and will be required to satisfy the Health and Safety regulations of the company or organisation at which they are based. • *(International students only)* Due to visa requirements, it is not possible for international students who require a Tier 4 Visa to apply for direct entry onto the 4-year with Work Placement Year degree programme. Students wishing to transfer onto this programme should discuss this with student

support, the academic tutor for the work placement year, and the Programme Lead. Students should be aware that there are visa implications for this transfer, and it is the student's responsibility to complete any and all necessary processes to be eligible for this programme. There may be additional costs, including applying for a new Visa from outside of the UK for international students associated with a transfer to the work placement programme.

Students may not register for both an International Year (see Annex A) and a Work Placement Year; students registered for 'Master in Computer Science with Work Placement Year' are exempt from studying an International Year.

Student Support

Students will be supported whilst on the Work Placement Year via the following methods:

- Regular contact between the student and a named member of staff who will be assigned to the student as their University supervisor. The University supervisor will be in regular contact with the student throughout the year, and be on hand to provide advice (pastoral or academic) and liaise with the Placement supervisor on the student's behalf if required.
- Two formal contacts with the student during the placement year: the University supervisor will visit the student in their placement organisation at around the 5 weeks afters placement has commenced, and then visit again (or conduct a telephone/video call tutorial) at around 15 weeks into the placement.
- Weekly supervision sessions will take place with the placement supervisor (or his/her nominee) throughout the duration of the placement.

Learning Outcomes

In addition to the learning outcomes specified in the main text of the Programme Specification, students who complete 'Master in Computer Science with Work Placement Year' will be able to:

LO4.1 Evaluate their own employability skills (via a SWOT Analysis).

LO4.2 Create ILOs for their placement in order to develop the skills areas which they have identified as being weak or needing further enhancement.

LO4.3 Develop, through practice in the work place, the work-related skills identified through their SWOT analysis and ILOs.

LO4.4 Apply academic theory learnt as part of the taught degree to real situations in the work place.

LO4.5 Reflect on their work placement activities and experiences and evaluate the impact on their employability skills.

LO4.6 Explain how the professional computing sector operates and identify the skills required to pursue careers within the sector.

These learning outcomes will be assessed through the non-credit bearing Work Placement Year module (CSC-30024) which is assessed by a Mid-Placement Portfolio, a Final Placement Portfolio and an Oral Presentation.

Course Regulations

Students registered for the 'Master in Computer Science with Work Placement Year' are subject to course specific regulations (if any) and the University regulations. In addition, during the Work Placement Year, the following regulations will apply:

- Students undertaking the Work Placement Year must successfully complete the zero-credit rated 'Work Placement Year' module (CSC-30024)
- In order to ensure a high quality placement experience, each placement agency will sign up to a

placement contract (analogous to a service level agreement).

- Once a student has been accepted by a placement organisation, the student will make a pre-placement visit and a member of staff identified within the placement contract will be assigned as the placement supervisor. The placement supervisor will be responsible for ensuring that the placement experience meets the agreed contract agreed with the University.

- The placement student will also sign up an agreement outlining his/her responsibilities in relation to the requirements of each organisation.

Students will be expected to behave professionally in terms of:

(i) conforming to the work practices of the organisation; and

(ii) remembering that they are representatives of the University and their actions will reflect on the School and have an impact on that organisation's willingness (or otherwise) to remain engaged with the placement.

Additional costs for the Work Placement Year

Tuition fees for students on the Work Placement Year will be charged at 20% of the annual tuition fees for that year of study, as set out in Section 1. The Work Placement Year can be included in your Student Finance allocation; to find out more about your personal eligibility see: www.gov.uk

Students will have to bear the costs of travelling to and from their placement provider, accommodation, food and personal costs. Depending on the placement provider additional costs may include parking permits, travel and transport, suitable clothing, DBS checks, and compulsory health checks.

A small stipend may be available to students from the placement provider during the placement but this will need to be explored on a placement-by-placement basis as some organisations, such as charities, may not have any extra money available. Students should budget with the assumption that their placement will be unpaid.

Eligibility for student finance will depend on the type of placement and whether it is paid or not. If it is paid, this is likely to affect student finance eligibility, however if it is voluntary and therefore unpaid, should not affect student finance eligibility. Students are required to confirm eligibility with their student finance provider.

International students who require a Tier 4 visa should check with the Immigration Compliance team prior to commencing any type of paid placement to ensure that they are not contravening their visa requirements.