

## Course Information Document: Undergraduate

### For students starting in Academic Year 2022/23

#### 1. Course Summary

<b>Names of programme and award title(s)</b>	<p>BSc (Hons) Computer Science          BSc (Hons) Computer Science (Artificial Intelligence)          BSc (Hons) Computer Science (Games)          BSc (Hons) Computer Science (Software Engineering)          BSc (Hons) Computer Science (Web and App Development)          BSc (Hons) Computer Science (Cyber Security)          BSc (Hons) Computer Science with International Year (see Annex for details)          BSc (Hons) Computer Science with Work Placement Year (see Annex for details)</p> <p>Please note that the International Year and Work Placement Year can be combined with all of the listed single honours Computer Science programmes.</p>
<b>Award type</b>	Single Honours
<b>Mode of study</b>	Full-time
<b>Framework of Higher Education Qualification (FHEQ) level of final award</b>	Level 6
<b>Normal length of the programme</b>	3 years; 4 years with either the International Year or Placement Year between years 2 and 3
<b>Maximum period of registration</b>	The normal length as specified above plus 3 years
<b>Location of study</b>	Keele Campus
<b>Accreditation (if applicable)</b>	Chartered Institute for IT (BCS)
<b>Regulator</b>	Office for Students (OfS)
<b>Tuition Fees</b>	<p><b>UK students:</b></p> <p>Fee for 2022/23 is £9,250*</p> <p><b>International students:</b></p> <p>Fee for 2022/23 is £17,900**</p> <p>The fee for the international year abroad is calculated at 15% of the standard year fee</p> <p>The fee for the work placement year is calculated at 20% of the standard year fee</p>

***Please note this document applies to Level 4 and Level 5 students only in 2022/23. Level 6 students should refer instead to the documents labelled '2020/21 Entry'.***

***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 a Single Honours programme?**

The Single Honours programme described in this document allows you to focus more or less exclusively on this subject. In keeping with Keele's commitment to breadth in the curriculum, the programme also gives you the opportunity to take some modules in other disciplines and in modern foreign languages as part of a 360-credit Honours degree. Thus it enables you to gain, and be able to demonstrate, a distinctive range of graduate attributes.

The Single Honours programme in Computer Science 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 be in accordance with the accreditation requirements of the British Computer Society (BCS).

## **3. Overview of the Programme**

Single Honours Computer Science 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 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 enable you to:

- Develop your intellectual, practical and additional transferable skills, to enable you to gain a sound academic grounding in the discipline of Computer Science and an understanding of the professional issues relevant to your future working life.
- 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.

The BSc Computer Science (Artificial Intelligence), BSc Computer Science (Games), BSc Computer Science (Software Engineering), BSc Computer Science (Web and App Development) and BSc Computer Science (Cyber Security) pathways allow students to specialise in a distinctive area of computer science by taking a range of pre-defined modules and a final year project related to the specialism. This gives a visible focus to the degree for students wishing to go into particular areas of the computer science field.

By following the Artificial Intelligence pathway through the degree programme, students will have the opportunity to discover modern approaches to Artificial Intelligence including computational intelligence and nature-inspired algorithms. This specialism is strongly research focused; students explore practical application of cutting-edge techniques on real-world problems and later spend time researching current research topics and writing a novel research proposal. The specialism includes study of artificial neural

networks, evolutionary computation, as well as covering adaptive behaviour in natural systems from the perspective of computational neuroscience.

By following the Games pathway students will gain skills in computer game development including a deep understanding of the architecture of computer systems, a thorough knowledge of practical software engineering in multimedia contexts and a strong ability to program complex graphical applications in C++.

By following the Software Engineering pathway students will learn the effective management of software engineering activities including the techniques and processes to undertake team-based agile development of software systems, based on the needs of clients and users.

By following the Web and App Development pathway students gain a practical understanding of the development lifecycle for web and mobile applications and cover areas such as Human Computer Interaction (HCI) and user-centred design principles; mobile app development for a range of devices and platforms including Android; implementation of secure, distributed multi-tier web applications using current and emerging technologies, as well as comprehensive testing and evaluation using industry-standard methods.

By following the Cyber Security pathway, students will learn how to identify the major types of cybercrime and implement counter-measures to protect against them as well as explore laws relating to the major forms of cybercrime and cyber security. They will also learn the cyber security competencies required to protect information systems from unauthorised access, harm or misuse and gain practical experience of the theoretical and practical fundamentals of cyber security.

Students on the standard BSc Computer Science degree can take a mixture of any of the modules in the pathways described above.

## **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 knowledge and understanding
- Subject specific skills
- Key or transferable skills (including employability skills)

### **Subject knowledge and understanding**

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-based 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 specific skills**

Successful students will be able 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.

### **Key or 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 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.

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.

### **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 programme to programme, 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 three types of module delivered as part of your programme. They are:

- Compulsory modules - a module that you are required to study on this course;
- Optional modules - these allow you some limited choice of what to study from a list of modules;
- Elective modules (Global Challenge Pathways at Level 4) - a choice of modules from different subject areas within the University that count towards the overall credit requirement but not the number of subject-related credits.

A summary of the credit requirements per year is as follows, with a minimum of 90 subject credits (compulsory plus optional) required for each year.

For further information on the content of modules currently offered, including the list of elective modules, please visit: <https://www.keele.ac.uk/recordsandexams/modulecatalogue/>

For the pathway degrees, there are a set of compulsory modules that must be taken (see Module lists below for each Level) to obtain that specific degree title as well as a Third Year Double Project (CSC-30014) that relates to the pathway specialism. The relevance of the project to the pathway specialism will be guided and determined by the Project Supervisor and Second Marker.

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## Module Lists

### *Level 4*

**BSc (Hons) Computer Science, BSc Computer Science (Artificial Intelligence), BSc Computer Science (Software Engineering), BSc Computer Science (Web and App Development)**

Year	Compulsory	Optional		Electives	
		Min	Max	Min	Max
Level 4	90	15	30	0	15

Compulsory modules	Module Code	Credits	Period
Programming I - Programming Fundamentals	CSC-10024	15	Semester 1
Fundamentals of Computing	CSC-10029	15	Semester 1
Computer Animation and Multimedia	CSC-10026	15	Semester 2
Natural Computation	CSC-10035	15	Semester 2
Introduction to Interaction Design	CSC-10040	15	Semester 2
Communication, Confidence and Competence	CSC-10056	15	Semester 2

Optional modules	Module Code	Credits	Period
Cybercrime	CSC-10025	15	Semester 1
Systems and Architecture	CSC-10033	15	Semester 1

### BSc (Hons) Computer Science (Games)

Year	Compulsory	Optional		Electives	
		Min	Max	Min	Max
Level 4	105	0	15	0	15

Compulsory modules	Module Code	Credits	Period
Programming I - Programming Fundamentals	CSC-10024	15	Semester 1
Fundamentals of Computing	CSC-10029	15	Semester 1
Computer Animation and Multimedia	CSC-10026	15	Semester 2
Communication, Confidence and Competence	CSC-10056	15	Semester 2
Natural Computation	CSC-10035	15	Semester 2
Introduction to Interaction Design	CSC-10040	15	Semester 2
Systems and Architecture	CSC-10033	15	Semester 1
Optional modules	Module Code	Credits	Period
Cybercrime	CSC-10025	15	Semester 1

### BSc (Hons) Computer Science (Cyber Security)

Year	Compulsory	Optional		Electives	
		Min	Max	Min	Max
Level 4	105	0	15	0	15

Compulsory modules	Module Code	Credits	Period
Programming I - Programming Fundamentals	CSC-10024	15	Semester 1
Fundamentals of Computing	CSC-10029	15	Semester 1
Computer Animation and Multimedia	CSC-10026	15	Semester 2
Communication, Confidence and Competence	CSC-10056	15	Semester 2
Natural Computation	CSC-10035	15	Semester 2
Introduction to Interaction Design	CSC-10040	15	Semester 2
Cybercrime	CSC-10025	15	Semester 1
Optional modules	Module Code	Credits	Period
Systems and Architecture	CSC-10033	15	Semester 1

#### Additional optional modules: English for Academic Purposes

Students who are required to take an English for Academic Purposes (EAP) module as a result of their language competency test result will be required to pick this as their first option choice. *NB:* students can take an EAP module only with the approval of the English Language Programme Director and are not able to take any other Language module in the same academic year.

#### Global Challenge Pathways (GCPs) - Level 4 (year 1) students only

Students at Level 4 in 2022/23 have the option of taking a Global Challenge Pathway, which includes one 15-credit module in each year of the degree. Global Challenge Pathways offer students the chance to fulfil an exciting, engaging route of interdisciplinary study. Choosing a pathway, students will be presented with a global issue or 'challenge' which directly relates to societal issues, needs and debates. They will be invited to take part in academic and external facing projects which address these issues, within an interdisciplinary community of students and staff. Students completing a Global Challenge Pathway will receive recognition on their degree certificate.

<b>Digital Futures</b>	<p>The Digital Futures pathway offers you the opportunity to become an active contributor to current debates, cutting-edge research, and projects with external partners, addressing both the exciting potential and the challenges of disruptive digital transformation across all spheres of life.</p> <p>Part of a diverse and interdisciplinary pathway community, you will engage in exciting, impactful collaborative project work in innovative formats. Engaged in real-world scenarios, you will use digital technology and creativity to promote inclusive, empowering, and sustainable change at local and global levels.</p> <p><b>Module: A digital life: challenges and opportunities (GCP-10005)</b></p>
<b>Climate Change &amp; Sustainability</b>	<p>Through the Climate Change &amp; Sustainability pathway you will develop the skills, understanding and drive to become agents of change to tackle climate change and wider sustainability challenges.</p> <p>You will work with international partners to explore climate change and sustainability in different international contexts; lead your own projects to drive real change in your communities; and be part of educating others to help achieve a more sustainable future.</p> <p><b>Module: Climate Change &amp; Sustainable Futures: Global Perspectives (GCP-10009)</b></p>

<p><b>Social Justice</b></p>	<p>Students on this pathway will embark on a reflective journey drawing upon decolonising, feminist, and ethical perspectives on social justice, forging transformative outputs as agents of change.</p> <p>You will enter a dialogue with local, national, and international partners from Universities, NGOs, International Human Rights Committees. You will engage with key societal challenges, for example Covid 19 as a social crisis with impact on gender and racial identities. The pathway will allow you to monitor and critically evaluate policies and human rights treaties, and produce and disseminate digitally fluent, international and sustainable project findings.</p> <p><b>Module: Reflections on Social Injustices, Past and Present (GCP-10003)</b></p>
<p><b>Enterprise &amp; the Future of Work</b></p>	<p>If we are to achieve the promise of Sustainable Development Goals, solve the climate crisis and take advantage of the changes that the digital revolution provide, we need to understand the power of enterprise and prepare for future contexts of work, creativity and disruption.</p> <p>Supporting you to be part of future-facing solutions, this pathway will give you the ability to make judgements on the utilisation of resources, labour and capital. It will support you in developing creative, original thinking, allowing you to collaborate on projects that persuade and effect change, setting you up to thrive in future environments of work and innovation.</p> <p><b>Module: Enterprise and the Future of Work 1 (GCP-10007)</b></p>
<p><b>Global Health Challenges</b></p>	<p>By taking the global health challenge pathway you will develop solutions to improve the health and quality of life for particular people and communities, engaging with these groups to co-design interventions.</p> <p>This pathway will provide you with skills that go beyond a focus on health and will allow you to develop your ability to work in a team and lead change in society. The knowledge, skills and work experience will complement your core degree and enhance your career opportunities and graduate aspirations.</p> <p><b>Module: Key concepts and challenges in global health (GCP-10001)</b></p>
<p><b>Languages &amp; Intercultural Awareness</b></p>	<p>By choosing modules from this pathway, will develop a practical knowledge of a specific language, allowing you to graduate with an enhanced degree title, or develop skills to teach English as a Foreign Language. You will meet and communicate with speakers different linguistic and cultural communities, ranging from students at partner universities in Japan and China, to refugees in Hanley, and develop an understanding of how languages and cultures interact.</p> <p>This pathway explores the power of language as a force both for breaking down and building cultural and political barriers - words can be weapons as well as bridges. You will examine how language is used, examine linguistic choices and how these impact on intercultural understanding. Throughout the pathway we also examine the practice of communication across cultural contexts, exploring cultural differences such as the language of ethnicity and gender.</p> <p><b>Modules: you will be able to select from either a Modern Language of your choice OR Certificate in TESOL Level 1.</b></p>

**Level 5**

**BSc (Hons) Computer Science (including all pathways)**



Year	Compulsory	Optional		Electives	
		Min	Max	Min	Max
Level 5	105	0	15	0	15

Compulsory modules	Module Code	Credits	Period
Web Technologies	CSC-20021	15	Semester 1
Programming II - Data Structures and Algorithms	CSC-20037	15	Semester 1
Mobile Application Development	CSC-20038	15	Semester 1
Computational and Artificial Intelligence I	CSC-20043	15	Semester 1
Database Systems	CSC-20002	15	Semester 2
Advanced Programming Practices	CSC-20004	15	Semester 2
Software Engineering	CSC-20041	15	Semester 2

Optional modules	Module Code	Credits	Period
Digital Forensics	CHE-20042	15	Semester 2
Individual Study Topic in Computer Science	CSC-20047	15	Semester 2

## ***Level 6***

### **BSc (Hons) Computer Science**

Year	Compulsory	Optional		Electives	
		Min	Max	Min	Max
Level 6	30	75	90	0	15

Compulsory modules	Module Code	Credits	Period
Third Year Double Project - ISP	CSC-30014	30	Semester 1-2

<b>Optional modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Software Engineering Project Management	CSC-30016	15	Semester 1
Games Computing	CSC-30019	15	Semester 1
Bioinformatics	CSC-30022	15	Semester 1
Advanced Information Systems	CSY-30001	15	Semester 1
Computing in Education	CSC-30021	30	Semester 1-2
Advanced Databases and Applications	CSC-30002	15	Semester 2
Communications and Networks	CSC-30012	15	Semester 2
Advanced Web Technologies	CSC-30025	15	Semester 2
Computational and Artificial Intelligence II	CSC-30027	15	Semester 2

CSC-30021: see the section on Additional Costs

### **BSc (Hons) Computer Science (Artificial Intelligence)**

<b>Year</b>	<b>Compulsory</b>	<b>Optional</b>		<b>Electives</b>	
		<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>
Level 6	45	75	75	0	0

<b>Compulsory modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Third Year Double Project - ISP	CSC-30014	30	Semester 1-2
Computational and Artificial Intelligence II	CSC-30027	15	Semester 2
<b>Optional modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Software Engineering Project Management	CSC-30016	15	Semester 1
Games Computing	CSC-30019	15	Semester 1
Bioinformatics	CSC-30022	15	Semester 1
Advanced Information Systems	CSY-30001	15	Semester 1
Computing in Education	CSC-30021	30	Semester 1-2
Advanced Databases and Applications	CSC-30002	15	Semester 2
Communications and Networks	CSC-30012	15	Semester 2
Advanced Web Technologies	CSC-30025	15	Semester 2

### **BSc (Hons) Computer Science (Games)**

<b>Year</b>	<b>Compulsory</b>	<b>Optional</b>		<b>Electives</b>	
		<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>
Level 6	45	75	75	0	0

<b>Compulsory modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Third Year Double Project - ISP	CSC-30014	30	Semester 1-2
Games Computing	CSC-30019	15	Semester 1
<b>Optional modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Software Engineering Project Management	CSC-30016	15	Semester 1
Bioinformatics	CSC-30022	15	Semester 1
Advanced Information Systems	CSY-30001	15	Semester 1
Computing in Education	CSC-30021	30	Semester 1-2
Advanced Databases and Applications	CSC-30002	15	Semester 2
Communications and Networks	CSC-30012	15	Semester 2
Advanced Web Technologies	CSC-30025	15	Semester 2
Computational and Artificial Intelligence II	CSC-30027	15	Semester 2

### **BSc (Hons) Computer Science (Software Engineering)**

<b>Year</b>	<b>Compulsory</b>	<b>Optional</b>		<b>Electives</b>	
		<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>
Level 6	45	75	75	0	0

<b>Compulsory modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Third Year Double Project - ISP	CSC-30014	30	Semester 1-2
Software Engineering Project Management	CSC-30016	15	Semester 1
<b>Optional modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Bioinformatics	CSC-30022	15	Semester 1
Advanced Information Systems	CSY-30001	15	Semester 1
Computing in Education	CSC-30021	30	Semester 1-2
Advanced Databases and Applications	CSC-30002	15	Semester 2
Communications and Networks	CSC-30012	15	Semester 2
Advanced Web Technologies	CSC-30025	15	Semester 2
Computational and Artificial Intelligence II	CSC-30027	15	Semester 2
Games Computing	CSC-30019	15	Semester 1

### **BSc (Hons) Computer Science (Web and App Development)**

<b>Year</b>	<b>Compulsory</b>	<b>Optional</b>		<b>Electives</b>	
		<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>
Level 6	45	75	75	0	0

<b>Compulsory modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Third Year Double Project - ISP	CSC-30014	30	Semester 1-2
Advanced Web Technologies	CSC-30025	15	Semester 2
<b>Optional modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Bioinformatics	CSC-30022	15	Semester 1
Advanced Information Systems	CSY-30001	15	Semester 1
Computing in Education	CSC-30021	30	Semester 1-2
Advanced Databases and Applications	CSC-30002	15	Semester 2
Communications and Networks	CSC-30012	15	Semester 2
Computational and Artificial Intelligence II	CSC-30027	15	Semester 2
Games Computing	CSC-30019	15	Semester 1
Software Engineering Project Management	CSC-30016	15	Semester 1

### **BSc (Hons) Computer Science (Cyber Security)**

<b>Year</b>	<b>Compulsory</b>	<b>Optional</b>		<b>Electives</b>	
		<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>
Level 6	45	75	75	0	0

<b>Compulsory modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Third Year Double Project - ISP	CSC-30014	30	Semester 1-2
Cyber Security	CSC-30057	15	Semester 1
<b>Optional modules</b>	<b>Module Code</b>	<b>Credits</b>	<b>Period</b>
Bioinformatics	CSC-30022	15	Semester 1
Advanced Information Systems	CSY-30001	15	Semester 1
Computing in Education	CSC-30021	30	Semester 1-2
Advanced Databases and Applications	CSC-30002	15	Semester 2
Communications and Networks	CSC-30012	15	Semester 2
Advanced Web Technologies	CSC-30025	15	Semester 2
Computational and Artificial Intelligence II	CSC-30027	15	Semester 2
Games Computing	CSC-30019	15	Semester 1
Software Engineering Project Management	CSC-30016	15	Semester 1

## **9. Final and intermediate awards**

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

<b>Honours Degree</b>	360 credits	You will require at least 120 credits at levels 4, 5 and 6  You must accumulate at least 270 credits in your main subject (out of 360 credits overall), with at least 90 credits in each of the three years of study*, to graduate with a named single honours degree in this subject.  *An exemption applies for students transferring from a Combined Honours programme - see point 3.4 here: <a href="https://www.keele.ac.uk/regulations/regulationc3/">https://www.keele.ac.uk/regulations/regulationc3/</a>
<b>Diploma in Higher Education</b>	240 credits	You will require at least 120 credits at level 4 or higher and at least 120 credits at level 5 or higher
<b>Certificate in Higher Education</b>	120 credits	You will require at least 120 credits at level 4 or higher

**International Year option:** in addition to the above students must pass a module covering the international year in order to graduate with a named degree including the 'international year' wording. Students who do not complete, or fail the international year, will be transferred to the three-year version of the programme.

**Work Placement Year option:** in addition to the above students must pass a non-credit bearing module covering the work placement year in order to graduate with a named degree including the 'with Work Placement Year' wording. Students who do not complete, or fail the work placement year, will be transferred to the three-year version of the programme.

## 10. How is the Programme Assessed?

The wide variety of assessment methods used on this programme 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 on your programme:

- **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.
- **Oral presentations** and reports assess a student's ability to communicate their knowledge and understanding, both visually and orally, to both general and academic audiences.

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

	<b>Scheduled learning and teaching activities</b>	<b>Guided independent Study</b>	<b>Placements</b>
<b>Year 1 (Level 4)</b>	25%	75%	0%
<b>Year 2 (Level 5)</b>	24%	76%	0%
<b>Year 3 (Level 6)</b>	13%	87%	0%

## 12. Accreditation

The BSc (Hons) Computer Science, BSc (Hons) Computer Science with International Year, and BSc (Hons) Computer Science with Work Placement Year programmes are accredited by the Chartered Institute for IT (BCS).

## 13. University 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/>

If this programme has any exemptions, variations or additions to the University Regulations these will be detailed in an Annex at the end of this document titled 'Programme-specific regulations'.

## 14. Other Learning Opportunities

### Study abroad (semester)

Students on the 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 who meet external eligibility criteria 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.

## **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 in the Annex for the International Year.

## **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 in the Annex for the Placement Year.

## **15. Additional Costs**

### **Computer Science Programme Additional Costs**

Some travel costs may be incurred if an external project is undertaken in the third year. 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 (level 6) module which involves students spending one day a week supporting a teacher in a local school or college, over at least 16 weeks. Due to UK Home Office rules on student Tier 4 Visas this option is not available if a student has a student Tier 4 Visa to study in the UK. 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.

Students taking the BSc (Hons) Computer Science with Work Placement Year programme will be responsible for organising their own placement with the support of the module tutors. This allows students to choose when and where to carry out their work placement, taking into consideration the potential living and travel expenses incurred and the effect on other times available to earn money. Students are encouraged to consider the potential costs incurred in carrying out the work placements at the time of setting them up. Further guidance and support on these considerations is available from the module tutors.

For international students transferring onto the BSc (Hons) Computer Science with Work Placement Year programme there may be implications and additional costs incurred by this transfer relating to applying for a new student Visa from outside of the UK before the transfer takes place.

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 costs for this programme.

## **16. Annex - International Year**

### **Computer Science with International Year**

<b>International Year Programme</b>
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Students registered for this Single Honours programme may either be admitted for or apply to transfer during their period of study at Level 5 to the International Year option. Students accepted onto this option 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 standard 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 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 the International Year option.

### **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 55% across all modules at Level 5 is required. Students with up to 15 credits of re-assessment who meet the 55% requirement may progress to the International Year. Where no Semester 1 marks have been awarded performance in 1st year marks and ongoing 2nd year assessments are taken into account)
- 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)

Students may not register for both an International Year and a Placement Year.

### **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:

1. Describe, discuss and reflect upon the cultural and international differences and similarities of different learning environments
2. Discuss the benefits and challenges of global citizenship and internationalisation
3. Explain how their perspective on their academic discipline has been influenced by locating it within an international setting.
4. Communicate effectively in an international setting;
5. 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.



## Regulations

Students registered for the International Year are subject to the programme-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 module with significant overlap to the Level 6 modules they will study 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](http://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 who meet external eligibility criteria 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.

## 17. Annex - Work Placement Year

### Computer Science with Work Placement Year

#### Work Placement Year summary

Students registered for this programme may either be admitted for or apply to transfer during their studies to the 'with Work Placement Year' option (NB: for Combined Honours students the rules relating to the work placement year in the subject where the placement is organised are to be followed). 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 3-year 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 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 the Work Placement Year option.

#### 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 and a Work Placement 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 organization at around the 5 weeks after 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 the 'with Work Placement Year' option 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.

## **Regulations**

Students registered for the 'with Work Placement Year' option are subject to programme-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](http://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.

## 18. Annex - Programme-specific regulations

### Programme Regulations: Computer Science

<b>Final Award and Award Titles</b>	BSc (Hons) Computer Science BSc (Hons) Computer Science with International Year BSc (Hons) Computer Science with Work Placement Year
<b>Intermediate Award(s)</b>	Diploma in Higher Education Certificate in Higher Education
<b>Last modified</b>	June 2019
<b>Programme Specification</b>	<a href="https://www.keele.ac.uk/qa/programmespecifications">https://www.keele.ac.uk/qa/programmespecifications</a>

The University's Academic Regulations which can be found on the Keele University website (<https://www.keele.ac.uk/regulations/>)[1] apply to and regulate the programme, other than in instances where the specific programme regulations listed below over-ride them. These programme regulations list:

- *Exemptions* which are characterised by the omission of the relevant regulation.
- *Variations* which are characterised by the replacement of part of the regulation with alternative wording.
- *Additional Requirements* which set out what additional rules that apply to students in relation to this programme.

The following **exemptions, variations** and **additional requirements** to the University regulations have been checked by Academic Services and have been approved by the Faculty Education Committee.

#### A) EXEMPTIONS

The clause(s) listed below describe where an exemption from the University's Academic Regulations exists:

For the whole duration of their studies, students on this Programme are exempt from the following regulations:

- **No exemptions apply.**

## **B) VARIATIONS**

The clause(s) listed below describe where a variation from the University's Academic Regulations exists:

### **Variation 1: 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.

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

Additional Requirements

The programme requirements listed below are in addition to the University's Academic Regulations:

### **Additional requirement 1: Transfer onto the MComp Programme**

Regulation C6, paragraph 2.3 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.

[1] References to University Regulations in this document apply to the content of the University's Regulatory Framework as set out on the University website here <https://www.keele.ac.uk/regulations/>.

## **Version History**

### **This document**

**Date Approved:** 31 January 2022

### **Previous documents**

<b>Version No</b>	<b>Year</b>	<b>Owner</b>	<b>Date Approved</b>	<b>Summary of and rationale for changes</b>
1	2021/22	EDWARD DE QUINCEY	08 February 2021	
1.1	2020/21	EDWARD DE QUINCEY		To add
1	2020/21	THEO KYRIACOU	08 February 2021	
1	2019/20	THEO KYRIACOU	08 February 2021	