PROGRAMME SPECIFICATION

KEY FACTS

Programme name	Computer Science (with Integrated Foundation Year)
Award	MSci (Hons)
School	School of Mathematics, Computer Science and Engineering
Department or equivalent	Department of Computer Science
UCAS Code	G41F
Programme code	USCOSF
Type of study	Full Time
Total UK credits	600
Total ECTS	300
Partner (partnership programmes only)	None
Type of partnership	

PROGRAMME SUMMARY

The MSci (Hons) in Computer Science (with Integrated Foundation Year) will prepare you for a successful career in technical areas of computer science. It will develop your specialist programming, analysis and design expertise in areas that are particularly sought skills in modern IT businesses as well as universities and research institutions.

The programme covers computer science starting with core foundational skills such as programming, progressing to cover a range of computing topics with a focus on practical application, whilst maintaining a strong theoretical underpinning, then allowing specialism in advanced topics, such as advanced database technology, software systems design, data mining and data visualization. A 450 hour individual project will allow you to further explore a specialism whilst engaging with active researchers. The programme will also provide you with the professional skills essential to modern working.

The MSci (Hons) in Computer Science (with Integrated Foundation Year) is a full-time five-year Integrated Masters Programme. The programme consists of five Programme Stages, each corresponding to an academic year. Programme Stage 0 is intended to bring you up to the same standard as students joining the main degree directly into the first year. Programme Stage 1 and Programme Stage 2 are shared with the BSc (Hons) Computer Science and MSci (Hons) in Computer Science with Cyber Security and you can transfer to/from these programmes at the end of Programme Stage 2. The programme also shares Programme Stage 1 with the BSc (Hons) / MSci (Hons) Computer Science with Games Technology and you can transfer to/from these programmes at the end of Programme Stage 1. These transfers allow you to choose your final degree programme based on at least a year's experience of university study.

Each of the five Programme Stages of the programme consists of 120 credits:

- Programme Stage 0 consists core material in computing and mathematics with an additional course on employability.

- Programme Stage 1 develops the foundational material and key computing skills, including programming and databases.

- Programme Stage 2 consists of further compulsory core computer science subject matter and includes a 30-credit team project,

- You may elect to take an industrial placement between Programme Stage 2 and Programme Stage 3 or between Programme Stage 3 and Programme Stage 4.

- Programme Stage 3 consists of three core module and five elective modules, allowing you to develop specialisms drawing on the expertise of academic staff

- Programme Stage 4 consists of three advanced core module, two electives and a large, 45-credit, individual project supervised by a member of academic staff.

Aims

This programme aims to prepare you with the knowledge, skills and values needed for a technical career as computer scientist by
- equipping you with the computer scientist's core skills in programming

WHAT WILL I BE EXPECTED TO ACHIEVE?

On successful completion of this programme, you will be expected to be able to:

Knowledge and understanding:
- use and explain the theory of computer science
- use and, where appropriate, modify for specific use established systems development methods
- explain the concepts of computer programming
- demonstrate advanced, specialist theoretical and practical knowledge in a range of computer science sub-fields
- review and critically evaluate the literature and current developments and challenges in computer science, such as designing distributed applications or efficient algorithms for mobile devices
- select and apply leading-edge computing techniques to practical tasks in an independent manner
- understand professional, legal, social, cultural and ethical issues related to computing and be aware of societal and environmental impact
- identify and manage scientific and technical risks and uncertainty associated with computer science and its application
- explain legal issues relating to computing: intellectual property, data protection, computer misuse and health and safety

Skills:
- develop and critically evaluate specifications for specialist computer systems
- analyse, develop and select algorithms for computational tasks
- analyse and solve problems based on theoretical considerations, and develop innovative solutions, taking into account user needs and constraints.
- design, develop, maintain and evaluate complex computer programs and systems
- analyse, evaluate and act upon descriptive documents
- use new hardware and software technologies to create computer systems that exceed current capabilities
- plan and manage a large scale individual problem solving computing project
- communicate requirements and proposals for computer systems to other computing professionals
- synthesise information from disparate sources to compose systems and documents
- collaborate in working teams
- present and communicate topics in computer science effectively to technical and non-technical audiences
- engage in critical peer review process of papers, software and proposals, and give positive advice for improvement and innovation

Values and attitudes:
- embrace technical challenges as an opportunity for personal development
- rationally exploit both traditional and novel technological approaches
- rigorously assess alternative approaches and novel designs and implementations
- define a technical goal and encourage and lead others in order to achieve it

HOW WILL I LEARN?

The teaching and learning methods used are such that the levels of both specialisation of content and autonomy of learning increase as you progress through the programme. This is reflected in the programme structure: fundamental concepts and skills are addressed first, followed by core knowledge that builds on these fundamentals, which in turn prepares you for advanced electives and a 45 credit individual project in Programme Stages 3 and 4. This progression will be guided by active researchers in Computer Science, with the culminating individual project conducted largely independently with appropriate academic supervision.

The programme is delivered and assessed via a coordinated combination of: lectures (including programmed student activity); supervised tutorials; supervised laboratory work; independent coursework; group project work; and individual project work.

The standard format is that taught modules are delivered through a series of 20 hours of lectures and 10 hours of tutorials/laboratory sessions. Lectures are normally used to:
(a) present and explain the theoretical concepts underpinning a particular subject;
(b) highlight the most significant aspects of a module's syllabus; and
(c) indicate additional topics and resources for private study.
Tutorials are used to help you develop skills in applying the concepts covered in the lectures of the relevant module, normally in practical problem solving contexts. Laboratory sessions serve a similar purpose as the tutorials but their strategy is to demonstrate application of concepts and techniques through the use of state-of-the-art software development tools and environments.

You are expected to undertake independent study, including substantial coursework assignments for each module, which will be spent working on background reading, revision of notes, work on tutorial problems, coursework and individual or group work on projects.

Project work plays an important part in computing undergraduate programmes. The Team Project provides you with experience of the issues involved in software development projects as well as enhancing your team-working and related transferrable skills.

In the Individual Project you will carry out an independent investigation of a significant computing problem applying knowledge and skills that you have learnt through the programme. This activity is carried out under the supervision of academic staff, offered through a series of supervision sessions.

In addition to lecture, laboratory and tutorial support, the programme is supported by City's Moodle learning environment, which provides resources on each of the modules. This includes materials such as lecture notes and lab sheets, as well as interactive components, such as quizzes or discussion forums.

Elective placements and the workplace learning opportunities they provide are available to all students. A professional placement and career development module supported by visits from a Work-based Learning Advisor, ensures that you are able to identify learning opportunities that will enable you to attain and demonstrate competence in a work role; these opportunities arise naturally from workplace tasks, others are provided by negotiation focussed on your career and development plan.

WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?

Typically, modules are mainly assessed through written examination, but coursework also contributes to module assessment. The written examinations will contain theoretical questions, including mathematical aspects, as well as writing and analysing small amounts of code and small essays on the applications of computational techniques.

Coursework takes many forms, including programs, modelling, theoretical work, and essays. Project work plays an important part in computing undergraduate programmes. In the 30 credit Team Project you will be working in a group to design and develop a software product. For the 45 credit Individual Project you are expected to carry out an independent investigation of a significant computing problem applying what you have learnt through the programme, under the supervision of academic staff.

Assessment and Assessment Criteria

Assessment Criteria are descriptions, based on the intended learning outcomes, of the skills, knowledge or attitudes that you need to demonstrate in order to complete an assessment successfully, providing a mechanism by which the quality of an assessment can be measured. Grade-Related Criteria are descriptions of the level of skills, knowledge or attributes that you need to demonstrate in order achieve a certain grade or mark in an assessment, providing a mechanism by which the quality of an assessment can be measured and placed within the overall set of marks. Assessment Criteria and Grade-Related Criteria will be made available to you to support you in completing assessments. These may be provided in programme handbooks, module specifications, on the virtual learning environment or attached to a specific assessment task.

The assessment criteria will reflect the learning outcomes of the modules and the programme as a whole,

Feedback on assessment

Feedback will be provided in line with our Assessment and Feedback Policy. In particular, you will normally be provided with feedback within three weeks of the submission deadline or assessment date. This would normally include a provisional grade or mark. For end of module examinations or an equivalent significant task (e.g. an end of module project), feedback will normally be provided within four weeks. The timescale for feedback on final year projects or dissertations may be longer. The full policy can be found at: http://www.city.ac.uk/__data/assets/word_doc/0003/69249/s19.doc

Assessment Regulations

In order to pass your Programme, you should complete successfully or be exempted from the relevant modules and assessments and will therefore acquire the required number of credits. You also need to pass each Programme Stage of your Programme in order to progress to the following Programme Stage.

The five Programme Stages of the programme are weighted as follows: Programme Stages 0 and 1 carry no weight (in recognition that the first year of study students with differing background are experiencing university education for the first time); Programme Stage 2 contributes 20% of the final degree mark; Programme Stage 3 contributes 40% of the final degree mark; Programme Stage 4 contributes 40% of the

WHAT AWARD CAN I GET?

<u>Master of Science with Honours:</u>

Programme Stage	Credits required	HE Level	Weighting (%)	Class	%
0	120	3	0	I	70
1	120	4	0	II upper division	60
2	120	5	20	II lower division	50
3	120	6	40		
4	120	7	40		

<u>Bachelor's of Science with Honours:</u>

Programme Stage	Credits required	HE Level	Weighting (%)	Class	%
0	120	3	0	I	70
1	120	4	0	II upper division	60
2	120	5	40	II lower division	50
3	120	6	60		

<u>Diploma of Higher Education:</u>

Programme Stage	HE Level
Credits	**Weighting (%)**

WHAT WILL I STUDY?

<u>Programme Stage 0</u>

To pass Programme Stage 0 you must have acquired 120 credits at level HE3 as specified in the programme scheme. To progress from Programme Stage 0 to Programme Stage 1 of the degree, the Foundation Year requirements must have been satisfied. In particular, as stated above, a minimum overall year 0 average of 60% must be achieved.

Module Title	SITS Code	Module Credits	Core/ Elective	Can be compen- sated?	Level
Introduction to Programming with Python	IN0005	20	C	N	3
Web Development	IN0006	20	C	N	3
Computer Fundamentals	IN0007	20	C	N	3
Discrete Mathematics	MA0002	20	C	N	3
Introduction to Probability and Statistics	MA0004	20	C	N	3
Employability and Transferable Skills	IN0008	20	C	N	3

<u>Programme Stage 1</u>

To pass Programme Stage 1, an Honours degree student must have acquired 120 credits as specified in Programme Stage 1 of the Programme Scheme. In addition a student must complete, achieving a mark of 100%, an online assessment covering risk/safety for safe operation of computing equipment. This online assessment is an exception to the assessment regulations; it has unlimited attempts but must be passed with a mark of 100% in order to progress to stage 2.This Programme Stage consists of 4 compulsory core modules, worth 15 credits each, and 2 compulsory core modules, worth 30 credits

Module Title	SITS Code	Module Credits	Core/ Elective	Can be compen- sated?	Level
Introduction to Algorithms	IN1002	15	C	Y	4
Mathematics for Computing	IN1004	15	C	Y	4
Systems Architecture	IN1006	15	C	Y	4
Programming in Java	IN1007	30	C	N	4
Databases and Web Development	IN1010	30	C	N	4
Operating Systems	IN1011	15	C	Y	4

<u>Programme Stage 2</u>

To pass Programme Stage 2, you must have acquired 120 credits as specified in Programme Stage 2 of the Programme Scheme. To progress from Programme Stage 2 to Programme Stage 3, Programme Stage 2 requirements must have been satisfied.

This Programme Stage consists of 6 compulsory core modules, each worth 15 credits, and compulsory core project module, which is worth 30 credits.

You may transfer into this programme route at the start of Programme Stage 2 if:
- you have passed the modules in Programme Stage 1;
- resources allow the transfer;
- the programme director approves the transfer.

TO WHAT KIND OF CAREER MIGHT I GO ON?

When you graduate with the MSci (Hons) in Computer Science you would be expected to progress directly into either advanced technical roles or research in the domain of computing. These roles can be in a broad range of areas, including all forms of software or hardware development, design and analysis of algorithms data structures and systems, data analysis and research into computational methods in diverse areas, such as industrial applications, media, vision, sound, security, or health. Graduates starting a new business can benefit from City's London City Incubator and City's links to Tech City, providing support for start-up businesses

If you would like more information on the Careers support available at City, please go to: http://www.city.ac.uk/careers/for-students-and-recent-graduates.

WHAT STUDY ABROAD OPTIONS ARE AVAILABLE?

There are no study abroad options for the programme.

WHAT PLACEMENT OPPORTUNITIES ARE AVAILABLE?

You will have the opportunity to undertake a placement in a diverse range of companies and roles working at blue-chip multinational corporations or dynamic start up ventures both in the UK and internationally. The broad spectrum of roles available will represent the developing nature of the Computer Science and Information Technology industry allowing you to focus on your interests whilst being exposed to new experiences and challenges.

You have the opportunity take a one year placement whilst at City University London.

The one year placement can be undertaken following successful completion of either Programme Stage 2 or Programme Stage 3 and will be required to last for a minimum of 9 months.

The following criteria apply to placements:

In order to join a placement route, you must successfully complete the preceding academic year.

You will need to source and apply for any placement opportunities independently however support and guidance will be provided throughout the application process by the Professional Liaison Unit.

In order to receive credit and successfully complete the placement, you will be required to submit deliverables for and pass a Professional Placement & Career Development module. Further information on this module and the associated deliverables can be found in the module guidance notes.

When undertaking a placement you must adhere to specific rules and regulations regarding placement conduct and other obligations as set out by the Professional Liaison Unit.

For further information on placement opportunities please go to the Professional Liaison webpage at https://www.city.ac.uk/mathematics-computer-science-engineering/placements-and-internships/about-professional-liaison-unit

WILL I GET ANY PROFESSIONAL RECOGNITION?

Accrediting Body: British Computer Society

Nature of Accreditation

In order to gain accreditation you must successfully complete the 480 credits of the MSci programme, including passing at the first attempt a practical problem solving project. In particular, leaving the programme after 3 year whilst earning and honours degree will not gain accreditation.

Partial CEng accreditation

Certificate
Diploma
Professional Graduate Diploma
PGD Project

HOW DO I ENTER THE PROGRAMME?

The Foundation Year is designed as an entry route for students who were unable to obtain the required A Level grades to access the corresponding BSc programme directly.

Our standard offer for MSci Computer Science (with Integrated Foundation Year) is CCC at A-Level.

In addition, GCSE English Language grade 4 and GCSE Mathematics grade 5 is required.

Each application is treated on its own merit. This is to allow us to weight in work experience, personal statements, and other factors, as and when appropriate.

Scholarships

Details of scholarships available to new undergraduate students can be found on the University's website at

http://www.city.ac.uk/study/why-study-at-city/fees-and-finance/scholarships