

## PROGRAMME SPECIFICATION

This document describes the **Single Honours B.Sc. degree programme in Computing Technologies**. This degree is not available for entry via UCAS: the department of Computer Science allows transfers into the degree depending on student profiles. This specification is valid for new students from **September 2018**.

The aims of this degree programme are:

- to produce graduates with the ability to engage in the lifelong learning and with the skills required for a professional career in a computer-based environment;
- to develop computing-related cognitive abilities and skills as described in the QAA Computing benchmark statement;
- to develop, in a flexible and progressive structure, students' knowledge and understanding of essential facts and theory, with the ability to use this knowledge to devise, cost, specify, design, implement, test, document and critically evaluate computer-based systems;
- to develop an understanding of professional and ethical issues involved in the deployment of computer technology;
- to produce graduates who can work effectively within teams;
- to produce graduates with a range of personal attributes relevant to the world beyond higher education, including information retrieval and use, numeracy, the ability to devise and present logical arguments to inform and support actions, and organisational skills;
- to produce graduates who understand how business value can be delivered.

This three-year B.Sc. degree programme corresponds to level 6 in the QAA framework.

Each stage comprises one year of full-time study during which the student must follow courses to the value of 120 national credits.

The programme provides progressive structures in which students are able to gain ever-wider knowledge and understanding, and appropriate skills. The programme introduces students to the theory and practice of Computing, including software development techniques and the technologies underlying specific application areas such as gaming and robotics. Team work will be emphasised in the curriculum of the first and second years. In the final stage of the programme, students undertake a project, which accounts for 50% of their studies.

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This document provides a summary of the main features of the programme(s), and of the outcomes which a student might reasonably be expected to achieve if full advantage is taken of the learning opportunities provided. Further information is contained in the College Regulations and in various handbooks issued to students. Whilst Royal Holloway keeps all its information under review, programmes and the availability of individual courses are necessarily subject to change at any time. Royal Holloway will inform students as soon as is practicable of any substantial changes which might affect their studies.

#### **Learning outcomes**

Teaching and learning in the Department of Computer Science are closely informed by the active research of staff. The programmes provide opportunities for students to develop and demonstrate knowledge of both core subject material and specialised areas.

The students in this programme will have an opportunity to develop and demonstrate the following learning outcomes:

##### *Knowledge and understanding*

- knowledge and understanding of the essential facts, concepts, principles and theories relating to computing and computer applications;
- an understanding of the professional, moral and ethical aspects of the use of computer-based systems, and ability to recognise any risks or safety aspects in a given context;
- knowledge of how computers are programmed and used; the fundamental technologies used for artificial intelligence; the functioning of the Internet and the World Wide Web; the main concepts of database technology and design; background theory necessary for a deeper understanding of computing and computers;
- an understanding of the principles of Software Engineering and the importance of good design;
- an understanding of how to work within a team in developing a significant software system;
- an understanding of the principles of information security and its context in Computing Technologies;
- an understanding of how to provide value to a customer;

##### *Skills and other attributes*

- ability to deploy appropriate practices and tools for the modelling, specification, design, implementation and evaluation of computer-based systems (including stand-alone computer systems, information systems, distributed systems and web-based systems) to meet given requirements under practical constraints;
- interpersonal skills, including the ability to work as a member of a development team, recognising/respecting the viewpoints of others, recognising the different roles within a team and the different ways of organising teams;\*
- problem identification, analysis and solution using critical assessment and reasoned argument;\*
- taking responsibility for own learning and developing habits of reflection on that learning;\*
- skills in written communication, project documentation, verbal presentation; numeracy and computation\*
- use of information technology (including spreadsheets, databases, word processing, email and WWW);\*
- information handling and retrieval (including the use of libraries and computer technology);\*
- ability to work autonomously, and to demonstrate time management and organisational skills;\*

- manage small projects;
- \* transferable skills

### Teaching, learning and assessment

Teaching and learning is mostly by means of lectures, small-group tutorials, practical and problem classes, supervised computing laboratory work, group work, completion of coursework and private study, and guided independent study.

Assessment of knowledge and understanding is typically by formal, unseen written examination, coursework assignments, project reports, oral presentations, and the final stage project report. Transferable skills are also inherently assessed through the assignments, reports and oral presentations. Feedback is provided on students' performance in coursework, both assessed and non-assessed, and during tutorial and practical sessions. Full details of the assessments for individual courses can be obtained from the [Department](#).

### Details of the programme structure(s)

This degree programme consists of the following courses, all of which are mandatory except where otherwise stated. With the exception of CS3824, all courses are condonable.

<b>STAGE 1</b>		
CS1811	Object oriented programming I	15 credits
CS1812	Object oriented programming II	15 credits
CS1820	Computing laboratory (robotics)	15 credits
CS1830	Computing laboratory (games)	15 credits
CS1840	Internet services	15 credits
CS1860	Mathematical structures	15 credits
CS1870	Machine fundamentals	15 credits
CS1890	Software design	15 credits

<b>STAGE 2</b>		
CS2800	Software engineering	15 credits
CS2810	Team project	15 credits
CS2847	Human-computer interaction	15 credits
CS2850	Operating systems	15 credits
CS2855	Databases	15 credits
CS2910	Introduction to artificial intelligence	15 credits
IY2760	Introduction to information security	15 credits
Elective	[Approval required; normally it will be from another department]	15 credits

STAGE 3		
CS3824	Project in Computing Technologies	60 credits
Electives	[Normally CS3003 IT project management, CS3910 Running a Small Business, CS3915 Standards, IP and Technology, and IY3501 Security Management; full list to be confirmed with the Department during the course choices process.]	60 credits

- At stage three, students may request to substitute a 15-credit elective course for another one outside the department provided the department approves the external course.
- While students are normally allocated a specific lab for any given course they are registered for, they may if they wish attend additional labs of that course where space allows.

### Progression and award requirements

The [College's Undergraduate Regulations](#) include full details on progression and award requirements for all undergraduate programmes offered by the College. On some programmes there may be a requirement to pass specific courses in order to progress to the next stage or to qualify for a particular degree title and this will put restrictions on courses in which failing marks can be condoned (see programme structure above for details). Additionally there are requirements on the number of courses that must be passed in order to qualify for particular joint or combined Honours degrees.

CS3824 Project in Computing Technologies must be passed in order to qualify for the award.

### Student support and guidance

- Advisors: All students are allocated a personal academic advisor who meets with them regularly through the programme. The advisor's role is to advise on academic, pastoral and welfare issues. Students have tutorials with their advisor during the first year.
- The programme co-ordinator, the director of pastoral care, the director of undergraduate studies and the head of department provide a back-up system of academic, pastoral and welfare advice.
- All staff are available and accessible. Initial contact can be arranged via email or through the departmental office.
- A student handbook is supplied to every student, and course notes and other learning resources are available either in hard copy or on the department's web site.
- Induction sessions are run at the start of each academic year by technical support staff on the use of the departmental computing systems.
- Technical back up is provided by the systems support staff for problems with using the departmental computing system.
- Extensive supporting materials and learning resources are available in the College libraries and the Computer Centre.
- Careers advice is provided by the [College Careers and Employability Service](#) and the Departmental Careers and Employability Tutor.
- Access to all College and University support services, including Student Counselling Service, Health Centre and the Disability and Dyslexia Service for students with disabilities and Specific Learning Difficulties.

## Admission requirements

This degree is not available for entry via UCAS. The department of Computer Science allows transfers into the degree depending on student profiles.

## Further learning and career opportunities

Computing opens up a wide range of career opportunities for graduates and the department has a number of important links with industry. The Computing Technologies degree is new, but Computer Science graduates from the Department have found employment in a wide range of jobs. Many have gone into software houses such as Logica, while others have entered larger organisations such as British Telecom, Texas Instruments and BAE Systems. A large number enter careers with a management or financial slant, for example Accenture or large multi-national companies. The College Careers and Employability Service organises recruitment visits by companies and there are a number of careers fairs during the year when final year students can make useful contacts with prospective employers. For further details please refer to the [Careers Service](#).

## Indicators of quality and standards

Royal Holloway's position as one of the UK's leading research-intensive institutions was confirmed by the results of the most recent Research Excellence Framework (REF 2014) conducted by the Higher Education Funding Council (HEFCE). The scoring system for the REF 2014 measures research quality in four categories, with the top score of 4\* indicating quality that is world-leading and of the highest standards in terms of originality, significance and rigour and 3\* indicating research that is internationally excellent. 81% of the College's research profile was deemed to be within the 4\* or 3\* categories, an increase of over 20% since 2008. The results for the quality of our research outputs placed Royal Holloway 15th in the UK based on an overall Grade Point Average (GPA) score and 20th in the UK for 4\* and 3\* research.

The Department of Computer Science was ranked 11th in the UK for the quality of its research output, with 32.2% classified as 4\* (world leading) and 54.5% as 3\* (internationally excellent). This is an outstanding performance that reflects the department's strong research culture and significant expansion in its research portfolio, which transmits to the inspiring teaching that delivered across the degree programmes. 40% of the Research Impact has also been classified as 4\* (world leading), which reflects the strong engagement the department has with companies and the influence that its research has in the economy and society.

In the 2014 National Student Survey the Computer Science Department was joint sixth in the UK (third in England) rankings for Computer Science departments.

## List of programmes

All the programmes are taught by staff at Royal Holloway, University of London, and either lead to degree awards of the University of London or alternatively Diploma of Higher Education awards of Royal Holloway and Bedford New College. The QAA subject benchmark statement in Computing describes the general features which one might expect from Honours Degree programmes in the subject, and can therefore be used as a point of reference when reading this document (see [www.qaa.ac.uk](http://www.qaa.ac.uk)).

BSc Computing Technologies [Exit Award Only]