School of Computer Science

Important Degree Information:

B.Sc./M.A. Honours
The general requirements are 480 credits over a period of normally 4 years (and not more than 5 years) or part-time equivalent; the final two years being an approved Honours programme of 240 credits, of which 90 credits are at 4000 level and at least a further 120 credits at 3000 and/or 4000 levels. Refer to the appropriate Faculty regulations for lists of subjects recognised as qualifying towards either a B.Sc. or M.A. degree.

B.Sc./M.A. Honours with Integrated Year Abroad
The general requirements are 540 credits over a period of normally 5 years (and not more than 6 years) or part-time equivalent; the final three years being an approved Honours programme of 300 credits, of which 60 credits are gained during the integrated year abroad, 90 credits are at 4000 level and at least a further 120 credits at 3000 and/or 4000 levels. Refer to the appropriate Faculty regulations for lists of subjects recognised as qualifying towards either a BSc or MA degree.

Other Information: In the case of students who spend part of the Honours programme abroad on a recognised Exchange Scheme, the Programme Requirements will be amended to take into account courses taken while abroad. From 2009/10, the School will to participate in ID4001 (Communication and Teaching in Science). This may be taken by Single Honours Computer Science/Internet Computer Science students as an alternative to level 3/level 4 option credits, as shown below.

Degree Programmes	Programme Requirements at:
(B.Sc. Honours): **Computer Science**	**Single Honours Computer Science (B.Sc. Honours):** **Level 1:** At least 40 credits consisting of CS1002, CS1004 and (either CS1010 or appropriate mathematics background) **Level 2:** 60 credits consisting of passes in both CS2001 and CS2002, at grade 11 or better except with the Head of School's permission **Level 3:** Normally in the Junior Honours year, 120 credits, consisting of: - 30 credits from CS3001–CS3099 - 60 credits from CS3101–CS3199 - 30 credits from CS3201–CS3299 **Level 4:** Normally in the Senior Honours year, 120 credits, consisting of: - 45 credits from CS4001–CS4099 - 45 (or more) credits from CS4101–CS4199 and CS4201–CS4299, including 30 (or more) credits from CS4201–CS4299 - remaining credits from CS3001–CS4999, ID4001

Degree Programmes	Programme Requirements at:
(B.Sc. Honours): **Computer Science and one of Economics, Logic & Philosophy of Science, Management, Management Science, Mathematics, Physics or Statistics**	**Computer Science element of Joint Degree (B.Sc. Honours):** **Level 1:** At least 40 credits consisting of CS1002, CS1004 and (either CS1010 or appropriate mathematics background) **Level 2:** 60 credits consisting of passes in both CS2001 and CS2002, at grade 11 or better except with the Head of School's permission **Level 3:** Normally in the Junior Honours year, 60 credits, consisting of: - 15 credits from CS3099 - 45 credits from CS3051, CS3101–CS3199 and CS3201–CS3299, including 15 (or more) credits from CS3201–CS3299 **Level 4:** Normally in the Senior Honours year, 60 credits, consisting of: - 15 (or more) credits from CS4076–CS4099 - 30 (or more) credits from CS4101–CS4199, CS4201–CS4299, including 15 (or more) credits from CS4201–CS4299 - remaining credits from CS3001–CS4999
(B.Sc. Honours): **Computer Science and Psychology**	**Computer Science element of Joint Degree (B.Sc. Honours):** **Level 1:** At least 40 credits consisting of CS1002, CS1004 and (either CS1010 or appropriate mathematics background) **Level 2:** 60 credits consisting of passes in both CS2001 and CS2002, at grade 11 or better except with the Head of School's permission **Level 3:** Normally in the Junior Honours year, 45 credits, consisting of: - 15 credits from CS3051 – CS3099 - 30 credits from CS3101 – CS3299 **Level 4:** Normally in the Senior Honours year, 45 credits, consisting of: - 15 credits from CS4076–CS4099 - 30 credits from CS4051 and CS4101–CS4499 Note: The total Honours credits in Computer Science and in Psychology must equal or exceed 240.
(B.Sc. Honours): **Computer Science with French^,** ^ - available also as 'With Integrated Year Abroad Degree' ***This programme is only available to those already enrolled in it.** **Not available to entrants from 2008-09**	**Computer Science element of Major degree with Modern Languages:** **Level 1:** At least 40 credits consisting of CS1002, CS1004 and (either CS1010 or appropriate mathematics background) **Level 2:** 60 credits consisting of passes in both CS2001 and CS2002, at grade 11 or better except with the Head of School's permission **Level 3:** Normally in the Junior Honours year, 90 credits, consisting of: - 30 credits from CS3001–CS3099 - 30 or 45 credits from CS3101–CS3199 - remaining credits from CS3201–CS3299 **Level 4:** Normally in the Senior Honours year, 90 credits, consisting of: - 15 (or more) credits from CS4076–CS4099 - 45 (or more) credits from CS4101–CS4199 and CS4201–CS4299, including 15 (or more) credits from CS4201–CS4299 - remaining credits from CS3001–CS4999

Degree Programmes	Programme Requirements at:
(B.Sc. Honours): **Internet Computer Science**	**Single Honours Internet Computer Science B.Sc. Degree:** **Level 1:** At least 40 credits consisting of CS1002, CS1004 and (either CS1010 or appropriate mathematics background) **Level 2:** 60 credits consisting of passes in both CS2001 and CS2003, at grade 11 or better except with the Head of School's permission **Level 3:** Normally in the Junior Honours year, 120 credits, consisting of: - 30 credits from CS3001–CS3099 - 60 credits from CS3101–CS3199 - 30 credits from CS3301–CS3399 **Level 4:** Normally in the Senior Honours year, 120 credits, consisting of: - 45 credits from CS4001–CS4099 - 45 (or more) credits from CS4101–CS4199 and CS4301–CS4399, including 30 (or more) credits from CS4301–CS4399 - remaining credits from CS3001–CS4999, ID4001
(B.Sc. Honours): **Internet Computer Science and one of** **Economics, Logic & Philosophy of Science, Management, Management Science, Mathematics, Physics or Statistics** (Not available to entrants from 2011-12)	**Internet Computer Science element of Joint Honours B.Sc. Degrees:** **Level 1:** At least 40 credits consisting of CS1002, CS1004 and (either CS1010 or appropriate mathematics background) **Level 2:** 60 credits consisting of passes in both CS2001 and CS2003, at grade 11 or better except with the Head of School's permission **Level 3:** Normally in the Junior Honours year, 60 credits, consisting of: - 15 credits from CS3099 - 45 credits from CS3051, CS3101–CS3199 and CS3301–CS3399, including 15 (or more) credits from CS3301–CS3399 **Level 4:** Normally in the Senior Honours year, 60 credits, consisting of: - 15 (or more) credits from CS4076–CS4099 - 30 (or more) credits from CS4101–CS4199, CS4301–CS4399, including 15 (or more) credits from CS4301–CS4399 - remaining credits from CS3001–CS4999

Students still completing degree programmes as defined in previous Course Catalogues should discuss their module selections with their Honours Adviser(s).

Modules

InterDisciplinary (ID) Modules

This School contributes to an InterDisciplinary module – **ID2003 Science Methods** (see Section 23).

Computer Science (CS) Modules

CS1002 Computer Science

Credits:	20	Semester:	1

Prerequisites: Mathematics (either GCSE, at grades A* to C, or Standard Grade, at grades 1 to 2)

Description: This module covers problem-solving skills, object-oriented modelling and programming. Programming exercises include object-oriented modelling, computer graphics and data structures.

Class Hour: 10.00 am

Teaching: Four lectures, one tutorial and one two-and-a-half hour laboratory.

Assessment: Continuous Assessment = 40%, 2 Hour Examination = 60%

Re-Assessment: Continuous Assessment = 40%, 2 Hour Examination = 60%

CS1004 Internet Programming

Credits:	20	Semester:	2

Prerequisite: CS1002

Description: This module provides an introduction to concepts in networked computing: client-server architectures, addressing, protocols and networking technologies. It will provide an introduction to protocols with emphasis on the Internet Protocols including TCP, IP, HTTP and SMTP and the use of Java for programming networked applications. Data and meta data formats including HTML, XML, MIME etc. will be discussed. Authoring of Web pages including the use of Java Applets will be explored.

Class Hour: 10.00 am

Teaching: Four lectures, one tutorial and one two-and-a-half hour laboratory.

Assessment: Continuous Assessment = 40%, 2 Hour Examination = 60%

Re-Assessment: Continuous Assessment = 40%, 2 Hour Examination = 60%

CS1005 Computer Science in Everyday Life

Credits:	20	Semester:	1

Prerequisite: GCSE/Standard grade Maths

Description: This module will introduce key ideas of Computer Science through examination of the working of devices and services which are part of modern everyday life, such as search engines, personal music players, mobile telephones and social networking sites. Students will be led to develop an understanding of some fundamentals of Computer Science, as well as gain transferable skills in critical reading, research in the technical literature and essay writing.

Class Hour: 12.00 noon

Teaching: Two or three lectures and one tutorial.

Assessment: Continuous Assessment = 40%, 2 Hour Examination = 60%

Re-Assessment: Continuous Assessment = 40%, 2 Hour Examination = 60%

CS1006 Programming Projects

Credits:	20	Semester:	2

Prerequisite: CS1002

Description: This module reinforces key Java programming skills gained in CS1002, by means of a series of coursework assignments posed as mini-projects. These are designed to offer increasing depth and scope for creativity as the module progresses.

Class Hour: 11.00 am

Teaching: One lecture, one tutorial and one two-and-a-half hour practical class.

Assessment: Continuous Assessment = 100%

Re-Assessment: no reassessment available

CS1010 Discrete Mathematics for Computer Science

Credits: 10   Semester: 1

Anti-requisites: Advanced Higher or A-level Mathematics at grade B or better; MT1001, MT1002

Co-requisite: CS1002

Description: This module aims to provide students without a strong post-16 mathematics qualification with the mathematical knowledge and skills necessary for the Computer Science and Internet Computer Science degree courses. A key ingredient will be regular practice to develop confidence, speed and accuracy in basic mathematical manipulation. The module covers the following topics: Mathematical notation and language, equations, elementary logic and rigorous arguments; Sets, sequences, and functions; Notations for these; Basic probability; Polynomials and their coefficients, degrees and roots; Graphs of functions; Matrices and matrix arithmetic.

Class Hour: 9.00 am

Teaching: Two lectures, one tutorial, one examples class

Assessment: Continuous Assessment = 40%, 1 Hour Examination = 60%

Re-Assessment: Continuous Assessment = 40%, 1 Hour Examination = 60%

CS2001 Foundations of Computation

Credits: 30   Semester: 1

Prerequisite: CS1002, CS1004 and one or more of CS1010, MT1001, MT1002, Mathematics at grade C or better in either A-level or Advanced Higher, Mathematics at grade B or better in either AS-level or Higher.

Description: This module introduces the fundamental algorithms, data structures and ideas about formal languages which are at the heart of modern software, and develops skills in programming and analysis.

Class Hour: 9.00 am

Teaching: Four lectures, one tutorial and a practical.

Assessment: Continuous Assessment = 40%, 2 One-and-a-half Hour Examinations = 60%

Re-Assessment: Continuous Assessment = 40%, 2 One-and-a-half Hour Examinations = 60%

CS2002 Advanced Computer Science

Credits: 30   Semester: 2

Prerequisite: CS2001

Description: This module develops expertise and skills in programming in C, systems programming, digital logic and low-level computer organization.

Class Hour: 9.00 am

Teaching: Four lectures, one tutorial and a practical.

Assessment: Continuous Assessment = 40%, 2 One-and-a-half Hour Examinations = 60%

Re-Assessment: Continuous Assessment = 40%, 2 One-and-a-half Hour Examinations = 60%

CS2003 Advanced Internet Programming

Credits: 30   Semester: 2

Prerequisite: CS2001

Description: This module explores the concepts and abstractions for Internet programming. Students are introduced to distributed computing models, server-side and client-side computing. Issues in building distributed Internet applications are practically illustrated through programming in Java and JavaScript.

Class Hour: 11.00 am

Teaching: Four lectures, one tutorial and a practical.

Assessment: Continuous Assessment = 40%, 2 One-and-a-half Hour Examinations = 60%

Re-Assessment: Continuous Assessment = 40%, 2 One-and-a-half Hour Examinations = 60%

CS2006 Advanced Programming Projects

Credits: 30   Semester: 1

Prerequisite: CS1002, and the same mathematics prerequisites as CS2001, i.e. one or more of CS1010, MT1002, MT1002, Mathematics at grade C or better in either A-level or Advanced Higher, Mathematics at grade B or better in either AS-level or Higher.

Description: This module introduces two new programming paradigms: functional programming in a strongly typed language, such as Haskell, and the use of a dynamic programming language, such as Python. Coverage of the fundamentals of the two paradigms will be followed by extensive practical exercises.

Class Hour: 11.00 am

Teaching: Four lectures, one tutorial and two practical classes.

Assessment: Continuous Assessment = 100%

Re-Assessment: no reassessment available

Information Technology (IS) Modules

IS1101 Information and Communication Technologies

Credits: 10   Semester: 2

Anti-requisite: IS1001

Description: This module is an intensive practically oriented introduction to Information Technology, covering aspects from a range of topics including The Internet, World Wide Web Basics, Word Processing, Graphics and Presentation Software.

Class Hour: 12.00 noon Monday and Tuesday

Teaching: Two lectures and one two-and-a-half hour laboratory.

Assessment: Continuous Assessment = 100%

Re-Assessment: no reassessment available

IS1102 Computers and Society

Credits: 10   Semester: 2

Anti-requisite: IS1001

Description: This module considers the use of computer systems from a technical, legal and ethical perspective, providing a grounding in the professional and social aspects of using Computers and Information Technologies.

Class Hour: 12.00 noon Wednesday, Thursday and Friday

Teaching: Two lectures and one tutorial.

Assessment: Continuous Assessment = 40%, One Hour Examination = 60%

Re-Assessment: Continuous Assessment = 40%, One Hour Examination = 60%

The details of the Honours modules – that is 3000-level and 4000-level modules – which relate to the programmes listed in this section are available in the Honours Course Catalogue.