



## University of London External Programme

### BSc Computing and Information Systems Programme Specification 2007-08

General Information	
Programme title	BSc in Computing and Information Systems
Final award	Bachelor of Science (Honours)
FHEQ level of final award	Honours 'H' Level
Associated Programmes (including short courses)	Diploma in Computing and Information Systems
FHEQ level of associated award(s)	Certificate 'C' Level
Awarding body	University of London
Lead College	Goldsmiths College
Programme Director	Dr David Brownrigg
Mode of study	Distance Learning
Programme accredited by	Not accredited by any other body
Programme started	1992
Study year start date	Students may start studying at any time but must be registered by 30 November to take examinations the following summer.
Relevant QAA subject benchmarks	Computing <a href="http://www.qaa.ac.uk/academicinfrastructure/benchmark/statements/computing07.pdf">http://www.qaa.ac.uk/academicinfrastructure/benchmark/statements/computing07.pdf</a>
Registration period (minimum/maximum)	Minimum 3 years (or two years where maximum exemption has been granted); Maximum 8 years
Average time to graduation	4 years
Teaching Institution attendance required?	Students are strongly advised to seek tuition at a suitable institution. (See prospectus for list of appropriate institutions)

Admissions Details	
Intake (quota)	None
Admission requirements – general entrance requirements, programme specific entrance requirements	<p><b>General</b> - Students who wish to register for a first degree must be normally at least 17 years of age at the time of registration and must satisfy the general entrance requirements.</p> <p>To satisfy the general entrance requirement as student must have passes in:            Either two subjects at GCE 'A' level, and at least three further subjects at GCSE or GCE 'O' level (at not less than grade C or a 'pass' if taken prior to 1975)            Or three subjects at GCSE 'A' level, and one further subject at GCSE 'O' level (at not less than grade C)            Or two subjects at GCE 'A' level, and two further subjects at 'AS' level.            The University may accept other qualifications in place of those above.            The University reserves the right to request students to provide evidence</p>

	<p>acceptable to the University of oral and written competence in English before an offer of registration can be made.</p> <p><b>Specific</b> - Students are also required to:</p> <ul style="list-style-type: none"> <li>• Demonstrate a competence at least equivalent to a pass in the GCE AS Level in a Mathematical subject and</li> <li>• Have specific hardware and software as described in the prospectus and student handbook.</li> <li>• All students must have access to the Internet on a weekly basis. Thirty minutes per week must be allowed as a minimum.</li> </ul> <p><u>Alternative entry for students with relevant work experience</u> Candidates with relevant work experience who are normally at least 21 years of age, and who do not satisfy the general entrance requirements may:</p> <ul style="list-style-type: none"> <li>• Register with the University of London and attempt the level one units <i>CIS108 Information Systems: Foundations of E-business</i> and <i>CIS109 Introduction To Java and Object-Oriented Programming</i>.</li> <li>• Register for BSc CIS on successful completion of both CIS108 and CIS109</li> </ul> <p>The regulations regarding assessment of coursework, number of attempts, extenuating circumstances, etc that apply to students on this entry route are the same as those in force for BSc CIS students. Students will have a maximum 3 year registration period.</p> <p>For further details refer to the BSc Computing and Information Systems Programme Regulations that are reviewed annually.</p>
<p><b>Possible exemptions</b></p> <p>Exemptions are given to students who have qualifications from outside the University of London; students will be exempt from subjects but no mark will count.</p> <p>There is currently a limit on the number of exemptions that can be awarded - up to one third of a degree.</p>	<p>Students may apply for exemption for up to a total of four units at Levels 1 and 2, of which not more than two may be at Level 2. There is no exemption from units at Level 3 of the degree.</p>
<p><b>Credit and transfer/progression arrangements</b></p> <p>Credits are given to students who have University of London qualifications; students can be credited with the same or equivalent subject previously passed and the mark they achieved will carry.</p>	<p>Applications for credit from students and graduates of the University of London will be considered on a discretionary basis.</p> <p>A student who has been awarded the Diploma in Computing and Information Systems will be deemed to have satisfied the entrance requirements for the BSc degree in Computing and Information Systems and may proceed to level 2 of the BSc degree.</p> <p>A student registered for the work experience entry route (formerly known as the mature entry route) who has successfully completed the level one course units CIS108 and CIS109 will be deemed to have satisfied the entrance requirements for the BSc degree in Computing and Information Systems and may proceed to register for the BSc degree.</p>

<b>Programme Outcomes</b>	
Distinctive features of the Programme	The programme develops the ability to solve technically well specified problems and also to agree robust solutions to incomplete or ill specified

	<p>scenarios typical of business environments. Consequently graduates of the BSc are better able to bridge the gap of language and understanding that often exists between technical specialists and general management.</p> <p>Thus CIS graduates are well equipped to be more rapidly developed as technically competent IT management and, beyond that, to develop into sound managers within classes of organisations that have dependence on IT.</p> <p>Apart from these vocational benefits, the CIS degree also equips graduates for a wide range of higher degrees. Examples of further degrees undertaken include a Technical Computing masters at Oxford and Management masters at the LSE.</p>
Possible routes to further study	Successful completion of the BSc with honours may allow students to progress to postgraduate study in the degree field or a related area.
Possible graduate employment routes	Graduates in this subject would be expected to become technically competent managers who are able to comprehend management requirements for the organization in business terms and lead a team of professionals in providing technical solutions that meet those needs. Particularly relevant careers include systems analysis, systems design, applications programming, IT consultancy, project management and web development. Other careers where graduates might benefit from this degree would include accountancy, banking and market research.

<b>Programme content and structure</b>	
Learning aims, objectives and intended outcomes	<p><b><u>Programme Aims</u></b></p> <p>The Educational aims of the programme are informed by the Computing Subject Benchmark Statement, the QAA Code of Practice, the National Qualifications Framework, the ACM-IEEE Curriculum Guidelines, and the Goldsmiths Teaching and Learning Strategy.</p> <p>The main purpose in designing and delivering the Computing and Information Systems programme is to provide students with a challenging educational experience that will equip them, upon completion, to act as creative autonomous professionals in contexts that depend upon computing systems, either freestanding or connected across wide-area or local-area networks. We aim to impart knowledge so that students can develop the critical and intellectual skills needed to analyse problems, design and implement solutions, and communicate those solutions in a variety of forms.</p> <p>The degree is intended for those interested in a career that includes management as well as, or instead of, a technical role. It is designed to provide a sound base for management in information systems, by including a variety of technical computing material as well as systems design content set in a business computing framework.</p> <p>This emphasis ensures that, with growing practical experience, business decisions involving commercial computing can be taken on a sound technical basis, while the information systems units lead to a better business awareness than would be provided in a purely technical computer science degree programme.</p> <p><b><u>Programme Outcomes</u></b></p> <p>The overall teaching and learning strategy is to provide students with a large degree of formative and evaluative coursework to reinforce and extend material presented in the subject guide.</p>

The programme provides students with opportunities for developing three different kinds of abilities and skills: Computing-related knowledge and cognitive abilities, Computing-related practical skills, and other transferable skills.

### ***A Knowledge and understanding***

**By the end of the programme students should have developed the following cognitive abilities:**

A1: Display knowledge and understanding in written answers to questions concerning fundamental topics underlying computers, software, networks and the Internet.

A2: Explain and demonstrate how theoretical models and abstractions underpin reasoning about computing systems.

A3: Discuss the process and difficulties of moving from user requirements to system specifications.

A4: Give an account of the necessity for, and methods of, decomposing large problems to comprehensible, solvable sub-problems.

A5: Examine critically an implemented computing system, both to verify that it meets its specification and that it is well-designed and useful.

A6: Demonstrate knowledge and understanding of the range of uses of computing systems in business environments and, moreover, discuss methods of evaluating a system's effectiveness in a given context.

A7: Give an account of the various roles of people in the design and use of computing systems.

A8: Discuss the ethical, social and legal issues pertaining to contemporary and future computing systems.

### **Teaching/Learning methods and Strategies for Cognitive Abilities:**

Students will be given the opportunity to acquire these abilities through the course unit subject reading, the recommended textbook and further reading and through formative assessments. For example, A1, A2, A6, A7 and A8 are addressed in level 1 subject guides. They are then reinforced by being a fundamental part of examples used in the guide, and in individual course work in subsequent years. The remaining cognitive abilities are only obliquely mentioned in the first year; and become an integral part of study material, recommended reading and coursework in years two and three.

### **Methods for assessing attainment of Cognitive Abilities:**

These abilities are assessed through a mixture of examinations, coursework assignments, and a substantial project in the final year. In particular, A1 is assessed directly by examinations in all three years and by very focussed coursework in the first year; A2 is assessed by an examination in the first year and it also forms part of the assessment in courseworks and examinations later in the programme; A7 is assessed through various courseworks and exams; A2-A6 are some of the principal criteria in assessing the final year project and on examinations and courseworks in several programming and software development courses throughout the programme. Assessments for the final year project—and, to a lesser extent for all courseworks—include criteria regarding original and critical thinking about a subject, understanding the implications of a problem

specification, formulating and presenting a clear argument, interpreting material in one's own words, and proficiency at analysis and evaluation.

### **B Skills and other attributes**

**By the end of the programme, students should have developed the following intellectual and practical skills:**

B1: The ability to gather requirements from potential users

B2: The ability to model requirements and the systems they lead to in an appropriate modelling language

B3: The ability to turn user requirements and specifications into the architecture of a computing solution.

B4: The ability to implement a computing system from a well-defined architecture.

B5: The ability to evaluate the fit of a computing system to a business requirement

B6: The ability to sustain a substantial software development project

#### **Teaching and learning methods for intellectual and practical skills:**

B1-B4 are taught in subject guides and associated material (possibly including web pages and CD-ROMS) and in recommended further reading, and the learning reinforced by structured coursework and assessed in the examination. B5 is most especially learnt in the final year project.

#### **Assessment methods for intellectual and practical skills:**

A combination of unseen examinations (all), coursework assignments (B3-B4), and the final year project (all)

### **C Transferable skills**

**By the end of the programme, students will typically have developed the ability to:**

C1: effectively retrieve information from disparate sources

C2: use computers to solve a variety of problems

C3: communicate using appropriate combinations of written texts and diagrams

C4: study independently

C5: manage their own learning

C6: organise and manage time effectively, including working to deadlines

C7: undertake sustained project work

C8: reason logically and argue persuasively

#### **Teaching/Learning methods and Strategies for Transferable Skills:**

Although these abilities are developed by individuals and assessed through coursework and examination, considerable benefit will be gained from

	<p>independent learning undertaken. Much of the coursework, throughout the programme, is designed to build upon these abilities. In particular, students are expected to be able to use libraries and find material to support their courseworks and to be able to write up their courseworks in a comprehensible way using the English language and diagrams where appropriate.</p> <p><b>Methods for assessing attainment of Transferable Skills:</b>  These abilities are assessed throughout the programme. All coursework involves C2; C1 is assessed directly in a first year course, and it is also, along with C3, part of the assessment of many courseworks and the final year project.</p>
<p>Learning and Teaching methods, including support, guidance, materials provided and study requirements</p>	<p>A registered student, <b>including those registered for the alternative entry route</b>, will be provided with the following materials every year:</p> <ul style="list-style-type: none"> <li>• Regulations, containing full details of syllabuses, programme structure etc.</li> <li>• A students handbook containing academic advice and practical study information.</li> <li>• <i>Studying for a Degree</i> - by Patrick Dunleavy</li> <li>• A booklet containing assignments and instructions on how to submit the assignments.</li> <li>• Past examination papers and Examiners' reports.</li> <li>• Subject guides for each unit studied - these guides introduce the topics within the syllabus and should be used alongside the textbooks that are recommended. Textbooks are the main focus of a student's study and some may need to be bought others accessed from a library.</li> <li>• Some of the subject guides have accompanying CD-ROMs which contain information such as: <ul style="list-style-type: none"> <li>❖ Searchable subject guides in HTML and PDF form</li> <li>❖ Interactive exercises</li> <li>❖ Audio and animated graphics material to provide additional support for key concepts</li> <li>❖ A hyperlinked glossary of terms.</li> </ul> </li> </ul> <p>Students also have access to a student-to student network - this allows registered students to communicate with each other and to provide mutual support.</p>
<p>Programme structure</p>	<p>The degree consists of twelve units as follows:</p> <ul style="list-style-type: none"> <li>• Level 1 - four compulsory full units</li> <li>• Level 2 - four compulsory full units</li> <li>• Six half units chosen from a list of half unit options plus the compulsory Project (valued as one full unit)</li> </ul> <p>In any year in which students choose to enter an examination they may attempt:</p> <ol style="list-style-type: none"> <li>(a) 'new' units only (i.e. units which have not previously been taken), in which case examinations to a minimum value of <b>one</b> new half-unit and maximum value of <b>four</b> new full units may be attempted, or</li> <li>(b) 're-sits' only (i.e. units failed at a previous examination), in which case any number of units may be attempted, or</li> <li>(c) a combination of new units and re-sits, in which case examinations to a maximum value of <b>four</b> new full units may be attempted in addition to any number of re-sits.</li> </ol> <p>In order to progress to Level 2 a student must:</p> <ul style="list-style-type: none"> <li>• have previously attempted the examination of all Level 1 units (from which they have not been granted exemption) <b>or</b></li> <li>• have entered the examination for any Level 1 units not</li> </ul>

	<p>previously attempted (or from which they have not been granted exemption), together with their first Level 2 entry</p> <p><b>and</b></p> <ul style="list-style-type: none"> <li>• must have passed or have been given exemption from a minimum of <b>two</b> units at Level 1</li> </ul> <p>Students may not normally attempt a unit at Level 3 before passing or gaining exemption from a minimum of <b>six</b> units at Levels 1 and 2 combined.</p> <p>Students may not attempt the <b>Project</b> at Level 3 before passing or gaining exemption from a minimum of <b>three</b> units at Level 2.</p> <p>A student registered for the BSc degree in Computing and Information Systems who has passed the four Level 1 units may not transfer his or her registration to the Diploma and be awarded that qualification.</p> <p>For further details refer to the BSc Computing and Information Systems Programme Regulations that are reviewed annually.</p>
Syllabus	<p>Level 1 - four compulsory full units</p> <p><i>Mathematics for computing [2910102]</i></p> <p><i>Information systems: foundations of e-business [2910108]</i></p> <p><i>Introduction to computing and the internet [2910110]</i></p> <p><i>Introduction to Java and object-oriented programming [2910109]</i></p> <p>Level 2 - four compulsory full units</p> <p><i>Data communications and enterprise networks [2910222]</i></p> <p><i>Programming: advanced topics and techniques [2910212]</i></p> <p><i>Database systems [2910209]</i></p> <p><b>Either</b> <i>Software engineering and development [2910210]</i> (last examination in 2007 except for re-sits) <b>or</b> <i>Software Engineering, Algorithm Design and Analysis [2910226]</i> (expected to be examined for the first time in 2007)</p> <p>Level 3 - six half units options</p> <p><i>Artificial intelligence [2910310]</i></p> <p><i>Neural networks [2910311]</i></p> <p><i>Software engineering management [2910314]</i></p> <p><i>Human computer interaction [2910315]</i></p> <p><i>Mathematical techniques of operational research [2910316]</i></p> <p><i>Accounting information systems [2910317]</i></p> <p><i>Information systems management [2910318]</i></p> <p><i>Decision support and executive information systems [2910319]</i></p> <p><i>Electronic commerce [2910323]</i></p> <p><i>Data compression [2910325]</i></p> <p><i>Computer security [2910326]</i></p> <p>Plus <i>Project in Computing/Information Systems [CIS320]</i></p> <p>For further details refer to the BSc Computing and Information Systems Programme Regulations that are reviewed annually</p>
Programme Regulations	<p>For further details refer to the BSc Computing and Information Systems Programme Regulations that are reviewed annually.</p> <p><a href="http://www.londonexternal.ac.uk/current_students/general_resources/regulations/index.shtml">http://www.londonexternal.ac.uk/current_students/general_resources/regulations/index.shtml</a></p>
Assessment methods, including proportion of different methods used	<p>The assessment for most units of the BSc Computing and Information Systems is by unseen written paper and coursework. Students must satisfy the examiners in both elements of the assessment. The results given for a unit where coursework is required will be a combination of the mark for the</p>

	written paper and the mark for the coursework, weighted 80:20. The assessment for the <i>Project</i> is by a written report and by an unseen written paper. The weighting is 70:30 respectively.														
Marking scheme and classification criteria	<p>A student is required to have been examined in units to the value of twelve full units, including the Project.</p> <p>In order to obtain the degree a student must pass in units to the value of ten full units, at least three of which must be at Level 3.</p> <p>In order to be considered for the award of the degree with Honours, a student must pass in units to a value of ten full units, at least three of which must have been passed at Level 3, and which must include the <b>Project</b>.</p> <p>The class of degree awarded is determined on the basis of the candidates' performance ten full units. Units at Level 3 carry most weight; units at Level 1 carry least weight. See the BSc Computing and Information Systems Programme Regulations for further details.</p> <table> <thead> <tr> <th><i>Mark Range</i></th> <th><i>Class Equivalent</i></th> </tr> </thead> <tbody> <tr> <td>70 and over</td> <td>First Class Honours</td> </tr> <tr> <td>60 – 69</td> <td>Second Class Honours (Upper Division)</td> </tr> <tr> <td>50 – 59</td> <td>Second Class Honours (Lower Division)</td> </tr> <tr> <td>40 – 49</td> <td>Third Class Honours</td> </tr> <tr> <td>35 – 39</td> <td>Pass</td> </tr> <tr> <td>0 – 34</td> <td>Fail</td> </tr> </tbody> </table>	<i>Mark Range</i>	<i>Class Equivalent</i>	70 and over	First Class Honours	60 – 69	Second Class Honours (Upper Division)	50 – 59	Second Class Honours (Lower Division)	40 – 49	Third Class Honours	35 – 39	Pass	0 – 34	Fail
<i>Mark Range</i>	<i>Class Equivalent</i>														
70 and over	First Class Honours														
60 – 69	Second Class Honours (Upper Division)														
50 – 59	Second Class Honours (Lower Division)														
40 – 49	Third Class Honours														
35 – 39	Pass														
0 – 34	Fail														
Estimated study hours overall	If the degree is to be obtained in the minimum registration period it is necessary to devote at least 30 hours per week for study over 36 weeks in each year. It is estimated that for each course unit a student will need to allow at least 250 hours. If studying at an institution it is expected that a student will have 90 hours per unit contact time in lectures, practicals and tutorials with a qualified teacher.														
Intellectual development (rationale of progression through course)	The purpose of Level 1 is to lay the foundations for your studies of the rest of the programme. There are four compulsory full unit courses, among which can be found the foundations for the mathematical modelling of systems, the use and basic design of computers, the place of computers in business practice, and an introduction to programming. The purpose of Level 2 is to consolidate the topics of Level 1, especially those topics most needed in the analysis and design of software systems. In this level, you will begin to create substantial applications involving graphics (drawing pictures on screens) and databases. At Level 3 the Project involves the development of a computing system and students are expected to be able to demonstrate what they have learnt in Level 1 and 2. More specialist optional courses are offered at Level 3. Students may select options for which they are particularly interested.														

<b>Quality Assurance</b>	
Particular indicators of quality	<p>The Department of Computing was audited by the Quality Assurance Agency in May 2004, receiving a very positive review of the CIS programme</p> <p>Visiting and intercollegiate examiners consistently comment that standards are in line with other University of London colleges and comparable British higher education institutions and, as the CIS programme reflects national academic standards, external students may also apply to transfer to another British university. Consult the student handbook for further information.</p> <p>The Department of Computing is looking into British Computer Society accreditation for the programme</p>

<p>Methods for assuring, evaluating and improving quality and standards of this programme</p>	<p>The University of London statute 66 (2), states that: ‘Candidates granted degrees and other awards shall have attained the same academic standard irrespective of mode or place of study or examination.’ Degrees and Diplomas awarded to External students are, therefore, examined to the same standard as those granted to Internal students of the University.</p> <p>In support of this statute, the External Programme and individual Lead Colleges share responsibility for ensuring the quality of External provision. The Quality Assurance Framework for the External Programme defines this shared responsibility and covers areas including:</p> <p><i>The bidding process</i> External programmes must undergo validation &amp; approval under Lead College mechanisms and with reference to national QAA benchmark statements.</p> <p><i>Student and programme management</i> This includes the admission, registration and progression of students, establishment of assessment procedures and appointment of boards of examiners.</p> <p><i>System wide matters</i> Academic policy and development is the responsibility of the External System Lead Colleges Committee, the membership of which is made up of representatives of all the Lead Colleges at Vice-Principal level. The qualifications framework for External programmes outlines the different levels of undergraduate and postgraduate study and the awards which may be made to External students.</p> <p><i>Systematic reporting and the review process</i> External Examiners make annual reports on assessment procedures and standards set and achieved. Annual Programme Reports provide annual summaries of programme information. These reports are considered and acted on as part of an annual review process.</p>
<p>Programme validation/approval</p>	<p>This programme commenced before the introduction of the current Quality Assurance framework for External programmes. Future programme approval or revalidation would be undertaken at Goldsmiths College by the Programme Approval and Review Sub-Committee of Academic Committee, and then recommended to Academic Board.</p>
<p>Appointment of external examiners</p>	<p>External Examiners help to match provision against national standards and are nominated by the Department of Computing and appointed by Goldsmiths College. It is the Department’s policy to nominate the same External Examiners for internal and external boards.</p>
<p>Student feedback mechanisms</p>	<p>External Programme wide student feedback mechanisms are currently under development and therefore no standard data is available yet.</p>