Programme Specification

BSc (Hons) Computing with a Year in Industry

November 2011

PART A: PROGRAMME SUMMARY INFORMATION

1.	**Title of Programme:**	Computing with a Year in Industry		
2.	**Programme Code:**	G402		
3.	**Award:**	BSc (Hons) Computing with a Year in Industry **480 credits including at least 90 credits at level 3 (FHEQ level 6) or higher**	**Credit 480**	**Level 6**
4.	**Other entry awards (if applicable):**	N/A	**Credit**	**Level**
5.	**Exit Awards:**	Diploma in Higher Education **240 credits including at least 90 credits at level 2 (FHEQ level 5) or higher** Certificate in Higher Education **120 credits including at least 90 credits at level 1 (FHEQ level 4) or higher**	**Credit 240** **120**	**Level 5** **4**
	Note: Credit levels shown in the above sections and elsewhere in this programme specification relate to the levels as described in the QAA Framework for Higher Education Qualifications (FHEQ) as follows: M = Level 7 in the FHEQ 3 = Level 6 in the FHEQ 2 = Level 5 in the FHEQ 1 = Level 4 in the FHEQ 0 = Level 3 in the FHEQ			
6.	**Date of first intake:**	September 2007		
7.	**Frequency of intake:**	Annually, in September/October		
8.	**Duration and mode of study:**	Full-time, 4 years		
9.	**Applicable framework:**	Model for Non-Clinical First Degree Programmes		
9a.	**Framework exemption**	N/A		
10.	**Applicable Ordinance:**	Ordinance 35 General Ordinance for Undergraduate Degrees Ordinance 37 Diploma in Higher Education Ordinance 38 Certificate in Higher Education		
10a.	**New/revised Ordinance**	N/A		
11.	**Applicable Regulations:**	Existing Regulations		
11a.	**New/revised Regulations**	No		
12.	**Level 2 School**	School of Electrical Engineering, Electronics, and Computer Science		
13.	**Faculty:**	Faculty of Science and Engineering		
14.	**Other contributors**	None		

	from UoL:	
15.	**Teaching other than at UoL:**	None
16.	**Director of Studies:**	Dr Valentina Tamma (Department of Computer Science)
17.	**Board of Studies:**	Board of Studies in Computer Science
18.	**Board of Examiners:**	The Computer Science Undergraduate Boards of Examiners
19.	**External Examiner(s)**	Professor David Robertson (The University of Edinburgh)
20.	**Professional, Statutory or Regulatory Body:**	BCS, The Chartered Institute of IT
21.	**QAA Subject Benchmark Statement(s)**	Computing
22.	**Other Reference Points:**	BCS Course Guidelines and Course Accreditation Criteria
23.	**Fees:**	Standard Science
24.	**Additional costs to students:**	None
25.	**AQSC approval:**	First approved 2007

PART B: PROGRAMME AIMS & OBJECTIVES

26.	**Aims of the Programme:** The use and exploitation of advanced software technology continues to be an important issue throughout most areas of society. Within this the development, updating and widespread application of complex software is the most time-consuming, difficult and expensive aspect. It is widely acknowledged that developing efficient, robust and correct software is inherently complex, and thus there is a requirement for professional software developers. In addition, however, to a need for appropriately skilled graduates it is increasingly recognised that knowledge, experience and awareness of the practical business and industrial environments with which such skills will be employed is essential. The principal aims of this programme are: • To provide students with an awareness of the considerations affecting the delivery of successful software systems. • To equip students with the knowledge and skills bases with which to undertake the design, realization, and maintenance of complex software systems. • To provide students with practical experience of computing within commercial and industrial settings. • To instill an awareness of the professional, ethical, and legal issues relating to the exploitation and development of computing systems.
27.	**Subject-based Learning Outcomes**
	Cognitive Abilities
	To provide student with 1.1 Knowledge and understanding of the essential facts, concepts, principles and theories relating to Computer Science in general, and their current use within in practical industrial settings in particular. 1.2 A good knowledge of how 1.1 can be used to model and design computer-based systems. 1.3 A good understanding of how to recognise and critically analyse criteria and

	specifications appropriate to problems to be solved by computers, and plan innovative strategies for their solution. 1.4 A sound knowledge of the criteria and mechanisms whereby computer-based systems can be critically evaluated and analysed to determine the extent to which they meet the criteria defined for their current and future development. 1.5 An in depth understanding of the appropriate theory, practices, languages and tools that may be deployed for the specification, design, implementation and evaluation of software systems. 1.6 Knowledge of how to present succinctly (orally, electronically or in writing) rational and reasoned arguments that address a given problem to be solved by computer. 1.7 A good understanding of the professional, moral and ethical issues involved in the exploitation of computer technology, and the associated professional, ethical and legal practices. 1.8 A good understanding of the field of Software Development and related sub-fields. 1.9 An appreciation of the world of business where computing technology may be used, including an awareness of financial and economic considerations in software development.
	Practical Abilities
	To provide students with the ability to 2.1 Specify, design and construct computer-based systems in a manner that is both innovative and creative; following sound Software Development principles and using a range of concepts, theories and practices. 2.2 Critically evaluate and analyse computer-based systems in terms of general quality attributes, possible trade-offs presented within a given problem, risks or safety aspects that may be involved in their operation, and professional, ethical and legal issues. 2.3 Deploy effectively the tools used for Software Development and documentation of computer applications, with practical emphasis on understanding the whole process involved in the effective deployment of computers to solve practical problems. 2.4 Work as a member of a development team, recognising the different roles within a team and different ways of organising teams. 2.5 Operate computing equipment effectively, taking into account its logical and physical properties.
27a.	**Mapping of subject-based Learning Outcomes:**

Module	Subject-Based Learning Outcomes (Cognitive Abilities)								
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
COMP101 (●)	C	C	C	C	C	C		C	
COMP102 (●)	E, C	E, C		E, C	E, C	E, C	E, C	E, C	
COMP103 (●)	E, C	E, C				E, C		E, C	
COMP104 (●)	E, C	E, C	E, C	E, C	E, C			E, C	
COMP106 (●)	E, C	E, C	E, C	E, C	E, C	E, C		E, C	
COMP108 (●)	E, C	E, C	E, C	E, C	E, C				
COMP109 (●)	E, C				E, C				
COMP110 (+)	C		C			C	C		C
COMP118 (●)	E, C								
COMP201 (+)	E, C	E, C	E, C	E, C	E, C			E, C	
COMP207 (●)	E, C	E, C	E, C	E, C	E, C		E, C		
COMP208 (●)	C	C	C	C	C	C	C	C	C
COMP211	E, C	E, C		E, C	E, C	E, C		E, C	
COMP212	E, C	E, C		E, C	E, C	E, C		E, C	E, C
COMP213 (●)	E, C	E, C		E, C	E, C			E, C	
COMP219	E, C	E, C	E, C	E, C	E, C				
COMP220 (●)	E, C	E, C	E, C	E, C	E, C			E, C	E, C
COMP222	E, C	E, C	E, C	E, C	E, C			E, C	
COMP281	C	C	C	C	C			C	C
COMP282	C	C	C	C	C			C	C

COMP283	C	C	C	C	C			C	C
COMP284	C	C	C	C	C			C	C
COMP299 (+)							C		C
COMP310	E	E	E	E	E				E
COMP313 (•)	E	E	E	E	E			E	
COMP315	E	E	E	E	E		E		
COMP317	E, C	E, C		E, C	E, C			E, C	
COMP318	E, C	E, C	E, C					E, C	
COMP319 (•)	E	E	E	E	E			E	E
COMP321	E, C	E, C							
COMP323	E, C	E, C				E, C			E, C
COMP327	E, C	E, C	E, C	E, C	E, C	E, C			E, C
COMP329	C	C	C	C	C	C			
COMP390 (+)	C	C	C	C	C	C	C	C	C
E --- Exam; C --- Continuous Assessment (`•' indicates a required module, `+' indicates a mandatory module)									
Module	Subject-Based Learning Outcomes (Practical Abilities)								
	2.1	2.2	2.3	2.4	2.5				
COMP101 (•)	C	C	C		C				
COMP102 (•)	C	C	C		C				
COMP103 (•)	C	C	C		C				
COMP104 (•)	C	C	C		C				
COMP106 (•)	C	C	C		C				
COMP108 (•)	C	C			C				
COMP109 (•)									
COMP110 (+)		C	C		C				
COMP118 (•)	C								
COMP201 (+)	C	C	C						
COMP207 (•)	C	C	C		C				
COMP208 (•)	C	C	C	C	C				
COMP211	C	C	C		C				
COMP212	C	C	C		C				
COMP213 (•)	C	C	C		C				
COMP219	C	C	C		C				
COMP220 (•)	C	C	C		C				
COMP222	C	C	C		C				
COMP281	C	C	C		C				
COMP282	C	C	C		C				
COMP283	C	C	C		C				
COMP284	C	C	C		C				
COMP299 (+)	C	C	C	C	C				
COMP310									
COMP313 (•)									
COMP315									
COMP317	C	C	C		C				
COMP318	C								
COMP319 (•)									
COMP321	C	C	C		C				
COMP323	C	C	C		C				
COMP327	C	C	C		C				
COMP329	C	C	C	C	C				
COMP390 (+)	C	C	C		C				
E --- Exam; C --- Continuous Assessment (`•' indicates a required module, `+' indicates a mandatory module)									

28.	**Skills and other attributes**
	Key Skills (Transferable Skills)
	To provide students with: 3.1 Effective information retrieval skills (including use of the WWW and the evaluation of information retrieved from such sources). 3.2 A good foundation in basic numeracy. 3.3 The ability to use general IT facilities effectively. 3.4 The ability to manage their own learning and development, and time management and organisational skills. 3.5 An appreciation of the need for continuing professional development in recognition for the need for lifelong learning. 3.6 An appreciation of computer science practice as emerging and developing discipline.
28a.	**Mapping of skills and other attributes:**

Module	Key Skills (Transferable Skills)								
	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
COMP101 (•)	C		C	C	C				
COMP102 (•)	C	C	C	E, C					
COMP103 (•)	C		C	E, C					
COMP104 (•)	C		C	E, C					
COMP106 (•)	C		C	E, C					
COMP108 (•)		E, C		E, C					
COMP109 (•)		E, C		E, C					
COMP110 (+)	C		C	C	C				
COMP118 (•)		E, C		E, C					
COMP201 (+)	C		C	E, C	C				
COMP207 (•)	C	E, C	C	E, C	C	C			
COMP208 (•)	C		C	C	C				
COMP211	C		C	E, C					
COMP212	C		C	E, C	C				
COMP213 (•)	C		C						
COMP219		C	C	E, C					
COMP220 (•)	C		C	E, C					
COMP222	C		C						
COMP281	C		C	C					
COMP282	C		C	C					
COMP283	C		C	C					
COMP284	C		C	C					
COMP299 (+)	C	C	C	C	C				
COMP310		E			E	E			
COMP313 (•)				E	E	E			
COMP315		E		E	E	E			
COMP317	C	C	C	E, C		C			
COMP318	C					C			
COMP319 (•)				E		E			
COMP321	C		C	E, C		C			
COMP323	C		C	E, C		C			
COMP327	C	C	C	E, C	C	C			
COMP329	C	C	C	C	C	C			
COMP390 (+)	C		C	C	C	C			

E --- Exam; C --- Continuous Assessment
(`•' indicates a required module, `+' indicates a mandatory module)

29.	**Career Opportunities:** The programme is directed at all career opportunities within the general domain of computer science and particularly those where a broad understanding, awareness and experience of the commercial and business oriented applications of computing technology would be seen as advantageous.

PART C: ENTRANCE REQUIREMENTS

30. **Academic Requirements:**

The typical offer for entrance to degree programmes in the Department of Computer Science is three subjects at GCE A level with grades AAB or better. We give a one grade bonus (ABB) for the inclusion of one or more mathematical subjects (Mathematics, Further Mathematics, Pure Mathematics, Computing/Computer Science, and Physics) included in these three subjects. All students are also expected to have GCSE English Language at grade C or better and GCSE Mathematics at grade C or better.

A wide range of other UK and International qualifications are also accepted.

Overseas qualifications are considered using NARIC to verify O/S qualifications and standards. Candidates from non-English speaking countries are expected to have IELTS >= 6.0 with minimum 5.5 in each component (other English Language Tests are also accepted, see http://www.liv.ac.uk/study/international/countries/english-language.htm#ug for details).

31. **Work Experience:**

It is University Policy to encourage mature entry. Each case is considered on merit, but in such cases work experience is taken into account.

32. **Other Requirements:**

None

PART D: PROGRAMME STRUCTURE

33. **Programme Structure:**

Students are expected to pursue the following programme of study
(`•' indicates a required module, `+' indicates a mandatory module)

Year 1:		Credit Value	Level	Semester	Exam:CW
COMP101	Introduction to Programming in Java (•)	15	1	1	0:100
COMP103	Computer Systems (•)	15	1	1	80:20
COMP109	Foundations of Computer Science (•)	15	1	1	80:20
COMP110	Professional Skills in Computer Science (+)	7.5	1	1+2	0:100
COMP102	Introduction to Databases (•)	15	1	1+2	60:40
COMP104	Operating System Concepts (•)	15	1	2	80:20
COMP106	Human-Centric Computing (•)	15	1	2	80:20
COMP108	Algorithmic Foundations (•)	15	1	2	80:20
COMP118	Logic in Computer Science (•)	7.5	1	2	80:20

Year 2:		Credit Value	Level	Semester	Exam:CW
COMP201	Software Engineering I (+)	15	2	1	80:20
COMP207	Database Development (•)	15	2	1	80:20
COMP213	Advanced Object Oriented Programming (•)	15	2	1	50:50

Plus either the following combination of two modules worth 30 credits

COMP211	Internet Computing	15	2	1	80:20
COMP212	Distributed Systems	15	2	2	80:20
or the following combination of two modules worth 30 credits					
COMP219	Artificial Intelligence	15	2	1	80:20
COMP222	Principles of Computer Game Design and Impl.	15	2	2	80:20
COMP208	Group Software Project (•)	15	2	2	0:100
COMP220	Software Development Tools (•)	15	2	2	80:20
Plus options totalling 15 credits from the following five modules provided pre-requisites are satisfied					
COMP281	Principles of C and Memory Management	7.5	2	2	0:100
COMP282	Advanced Object Oriented C Languages	7.5	2	2	0:100
COMP283	Applied Database Management	7.5	2	2	0:100
COMP284	Scripting Languages	7.5	2	2	0:100
COMP104	Operating Systems Principles *(only in 2011-12)*	15	1	2	80:20

Year 3:		Credit Value	Level	Semester	Exam:CW
COMP299	Industrial Placement Year 3	120	2	1+2	0:100
Students spend year three of this programme on a placement in an Industrial/Commercial environment relevant to the Software/IT emphasis of the programme. Students will be assisted in finding a suitable place by CLL**,** but no placement can be guaranteed**,** and any placement will be subject to the approval of the Director of Studies.					

Year 4:		Credit Value	Level	Semester	Exam:CW
COMP390	Honours Year Computer Science Project (+)	30	3	1+2	0:100
COMP319	Software Engineering II (•)	15	3	1	100:0
Plus options totalling 30 credits from the following four modules provided pre-requisites are satisfied					
COMP321	Ontology Languages and their Applications	15	3	1	80:20
COMP323	Introduction to Computational Game Theory	15	3	1	80:20
COMP327	Mobile Computing	15	3	1	60:40
COMP329	Robotics and Autonomous Systems	15	3	1	0:100
COMP313	Formal Methods	15	3	2	100:0
Plus options totalling 30 credits from the following four modules provided pre-requisites are satisfied					
COMP310	Multi-Agent Systems	15	3	2	100:0
COMP315	Technologies for E-Commerce	15	3	2	100:0
COMP317	Semantics of Programming Languages	15	3	2	80:20
COMP318	Advanced Web Technologies	15	3	2	80:20

Note 1: in exceptional circumstances, and with the approval of the programme Director of Studies, alternative modules may be substituted for non-mandatory modules.

Note 2: COMP104 is a new year 1 module introduced in 2011-12, replacing the year 2 module COMP204 Computer Systems and Their Implementation. Offering COMP104 as year 2 optional module in 2011-12 will ensure that year 2 students still have the opportunity to take a module similar to COMP204. From 2012-13 onwards, all year 1 students will have taken COMP104 thereby ensuring that this module no longer needs to be offered as year 2 option.

34. **Industrial Placement / Work Placement / Year Abroad:**

Year 3 will take place in an appropriate industrial computing environment, e.g. software development company, computer-support divisions within a commercial business, etc. Students will be assisted in finding a suitable placement, but no placement can be guaranteed. All such placements and the programme of work to be carried out as part of such, need to be approved by the Director of Studies. Each student is allocated an academic supervisor who provides a contact point for the student within the University. The supervisor will formally contact the student on two occasions during the placement in order to discuss

the student's progress**.** The contact will typically consist of a visit or Skype video conference. The supervisor is also available to assist the student with any queries through the year in industry.

With respect to COMP390 (the honours year project), this may be either an 'in house' or a 'Work Based Learning' (WBL) project. In the case of the latter the students carry out their projects in consultation with companies / organisations. Such projects are administered jointly by the CLL (Centre for Lifelong Learning) and the Department of Computer Science. Similar assessment procedures apply to both in-house and WBL final year projects.

35. **Liaison Between the Level 2 Schools Involved:**

N/A

PART E: LEARNING, TEACHING AND ASSESSMENT STRATEGIES

36. **Learning, Teaching and Assessment Strategies:**

The programme complies with:

a. University of Liverpool Policy on Standards and Quality in Learning and Teaching
b. University of Liverpool Learning and Study Skills Strategy
c. University of Liverpool Code of Practice on Assessment
(all at http://www.liv.ac.uk/tqsd/pol_strat_cop/index.htm)
d. Department of Computer Science Learning and Teaching Strategy:
http://www.csc.liv.ac.uk/department/LTAS.html

The programme is delivered through a mixture of formal lectures, guided reading and tutorial groups supported by practical work. The programme operates under the approved teaching and learning strategy of the Department of Computer Science.

The programme is assessed by a combination of traditional written examinations and continuous assessment, including marked essays and computer programming problems. The second year group project and the final year solo project modules include an element of assessment by oral, poster and demonstration representation of project work. All modules are assessed at the end of the semester at which they are taught. The mark produced for a module is subject to scrutiny at the meetings of Departmental Examiners, by the External Examiner and also by Faculty Examiners meeting. Decisions on progress are also controlled by the university's published regulations.

Modules in the Computer Science programme are assessed as follows (according to the nature of the module):

i. Examination only where the assessment is based entirely on examination, which is held at the end of the semester in which the module is taught.
ii. Continuous Assessment.
iii. Examination and continuous assessment.

Details of the assessment method for each module can be obtained from the Department of Computer Science Student Handbook.

37. **Assessment Information for Students:**

37a(i). **Assessment of Modules**
Full details of assessment methods for each module can be obtained from the module specification and module description on the Departmental web pages.

Full details of assessment procedures, including penalties governing late submission, rules relating to plagiarism and collusion, and mechanisms for consideration of assessments affected by ill-health or other extenuating circumstances can be found in Chapter 5 of the Department of Computer Science Student handbook.

37a(ii). **Assessment of the Year in Industry**

The overall assessment of the year in industry will be carried out by the designated academic contacts for the placement and the industrial supervisor representing the group on whose behalf the placement is being carried out. The mark awarded for the industrial placement is made up of a mark for the introductory essay (25%); a mark for the student's performance in the project work (25%); a mark for the final report (35%); and a mark for the student's performance in an oral examination (15%). Withdrawal from a placement once it has been accepted or deviation from the programme of work agreed by the Director of Studies without his/her agreement will result in failure of the year in industry.

37b. **Marking descriptors**

Marking on level 1, 2, and 3 modules offered by the Department of Computer Science is carried out using the following marking descriptors:

90 – 100%:

For practical exercises and projects:

Displays an *exceptional* degree of originality and creativity and / or *exceptional* analytical and problem solving skills. Solution must have novel aspects. The methodology employed is well-developed and correct.

For exercises, presentations, projects, and written examinations:

Shows *critical* understanding of current knowledge. For level 3 this should including relevant recent
research papers. Perceptive, focused treatment of all issues/questions presented in a critical and scholarly way.

80-89%

For practical exercises and projects:

Displays a level of originality and creativity and / or the ability to suggest realistic solutions to novel problems. The methodology employed is well-developed and correct.

For exercises, presentations, projects, and written examinations:

Evidence of wide reading. For level 3 this should include relevant research papers and books. Perceptive, focused treatment of all issues/questions presented in a critical and scholarly way.

70-79%

For practical exercises and projects:

Demonstrates ability to analyse, interpret and organise information to produce coherent accounts or solve complex problems. All aspects of a suitable methodology evident and used correctly.

For exercises, presentations, projects, and written examinations:

Comprehensive knowledge and understanding of the subject together with the ability to put the work into context and to critically evaluate selected aspects of the work. Arguments/answers will be clear, competently structured, and accurate.

60-69%

For practical exercises and projects:

Demonstrates ability to analyse, interpret and organise information to produce coherent accounts or solve relatively complex problems. Use of a suitable methodology evident and used correctly, with minor omissions.

For exercises, presentations, projects, and written examinations:

Good knowledge and understanding of the subject, with no major gaps or omissions, but minor gaps or omissions may occur. Arguments/answers will be clear, competently structured, and largely accurate.

50-59%

For practical exercises and projects:
Displays ability to analyse, interpret and organise information to produce coherent accounts or solve well-defined problems of some scope. Most aspects of a suitable methodology evident and used correctly, some omissions occur but without negative impact on the result of the work.
For exercises, presentations, projects, and written examinations:
Satisfactory knowledge and understanding of the essentials of the subject, with an ability to integrate information into a clear, well-structured account, but lacking in breadth or depth, or with some significant aspects omitted. Arguments/answers must be clear, although they may not be well-developed or reflect a wider appreciation of the subject. Some errors and omissions are likely to be present.

40-49%

For practical exercises and projects:
Demonstrates an ability to solve limited, well-defined, problems of a familiar type. Most aspects of a suitable methodology evident, but minor flaws in its use or omissions with some negative impact on the result of the work.
For exercises, presentations, projects, and written examinations:
General knowledge and understanding of the subject but very limited in depth or breadth. Arguments/answers are likely to be somewhat lacking in structure. There are likely to be errors and omissions and the evidence provided to support arguments will be very limited.

35-39%

For practical exercises and projects:
Fails to demonstrate an ability to solve limited, well-defined, problems of a familiar type. Aspects of a suitable methodology evident, but flaws in its use or omissions which negatively impact on the result of the work.
For exercises, presentations, projects, and written examinations:
Knowledge and understanding of the subject are fragmentary, some aspects showing a very basic level of understanding but other aspects displaying fundamental errors. Arguments/answers are lacking in structure. There are errors and omissions and the evidence provided to support arguments is very limited.

30-34%

For practical exercises and projects:
Fails to demonstrate an ability to solve simple, well-defined, problems of a familiar type. Lack of the use of a suitable methodology or flaws in its use which negatively impact on the result of the work.
For exercises, presentations, projects, and written examinations:
Knowledge and understanding of the subject are fragmentary, with an insufficient number of aspects showing a very basic level of understanding and too many aspects displaying fundamental errors and omissions. Arguments/answers are lacking in structure. There are errors and omissions and the evidence provided to support arguments is very limited.

20-29%

For practical exercises and projects:
Fails to demonstrate an ability to solve simple, well-defined, problems of a familiar type under guidance. Serious lack of the use of a suitable methodology or flaws in its use which negatively impact on the result of the work.
For exercises, presentations, projects, and written examinations:

Very limited range of knowledge with many important gaps and omissions. Shows incomplete understanding with numerous errors of interpretation. Arguments/answers have little structure, contain serious errors, and there is no support for arguments.

10-19%

For practical exercises and projects:
Little evidence of the use of a suitable methodology.
For exercises, presentations, projects, and written examinations:
Shows only the most limited and fragmentary knowledge of the subject with little or no understanding of essential principles and concepts. Work is likely to be unstructured and ill-presented. Arguments/answers are only loosely related to issues/questions or only cover a seriously inadequate part of the issues/questions

0-9%

For practical exercises and projects:
No evidence of the use of a suitable methodology.
For exercises, presentations, projects, and written examinations:
Virtually devoid of any evidence of knowledge or understanding of the subject. No or almost no arguments/answers.

37c. **Pass marks**
The pass mark for each module for students on this programme is 40%.

37d. **Progression**
The criteria for completing each year of study, other than the final year, and for progression to the next year/level of study, require a student to:

i. pass all mandatory modules; and
ii. pass in modules amounting to 90 credits; and
iii. achieve at least 40% averaged across all modules and a minimum mark of 35% in all modules.

These criteria are compulsory for study years 1 and 2 and for levels 1 and 2.

Marks in the range 35-39% which are compensated for by higher marks in other modules will be recorded as 40%.

Note: If desired, students enrolled on the BSc Computing with a Year in Industry programme can transfer (at the discretion of the appropriate director of undergraduate studies) to the BSC Software Development programme or any other compatible and admissible programme without a Year in Industry at any time during the first year of study. Similarly, students enrolled on the BSc Computing with a Year in Industry programme can transfer (at the discretion of the appropriate director of undergraduate studies) to any other compatible and admissible programme with a Year in Industry at any time during the first year of study.

37d(i). **Progression from Year 2 to Year 3 (Year in Industry)**
Students who fail (at first attempt) to satisfy all progression requirements for Year 2 will not be permitted to start the Year 3 Industry Placement and must transfer to the BSc Software Development programme or (at the discretion of the appropriate director of undergraduate studies) to any other compatible and admissible programme without a Year in Industry.

37d(ii). **Progression from Year 3 (Year in Industry) to Year 4**
To continue to Year 4 of this programme students must successfully complete the year in industry and obtain a pass mark in assessed work of 40%. If students fail to achieve a pass mark overall, then the introductory report and the final report may be resubmitted for reassessment in line with the Code of Practice on Assessment. No re-sit is possible for a student's performance in the project work or the oral examination element of the assessment. Students who fail to pass the year in industry have to transfer to the programme BSc

Software Development or, with the discretion of the Director of Studies, to another compatible and admissible programme without a Year in Industry.

37e. **Re-sits**

The actual marks achieved following a re-sit examination will be recorded, but such marks will be recorded as having been achieved at the second attempt. Where the mark achieved at the second attempt falls between 35-39% and meets the criteria for compensation, the mark will be recorded as 40% and will be flagged as having been achieved at the second attempt.

For the purposes of determining progression from years one to two and years two to three, the actual marks achieved following re-sits will be used to calculate the average mark.

For the purposes of arriving at the average mark for degree classification, marks achieved following re-sits in year two and year three will be capped at 40%.

Rules relating to the re-sitting of assessments can be found in the Departmental Student Handbook and module information pages from the Department's web pages.

37f. **Final degree classification for students who have commenced Year 1 before September 2010**

The degree classification will be determined according to the University-wide formula for non-clinical undergraduate degrees. The system is based on the use of an overall average of the weighted marks for year two, year three, and year four as the first indicator of the degree classification, with a system of profiling being employed in cases of students whose averages are at the borderline between classifications.

37f(i). **Credit to be passed**

If modules totalling 315 credits or more **from years one, two and four** have been passed, i.e. each module has been awarded a mark of 40% or above (this includes compensated marks of 40% gained in years one and two) and all mandatory modules have been passed the candidate will be ***considered*** for the award of a classified honours degree. If modules totalling ***more than*** 45 credits in year three have been failed, i.e. the module has been awarded a mark of less than 40%, the candidate will ***not*** be eligible for the award of an honours degree but may be eligible for the award of a pass (non-honours) degree.

37f(ii). **Averaging and Initial indication of degree classification**

(i) A mark is allocated for each module **taken in years two and four**. Each mark is multiplied by the number of credits allocated to the module to which it relates. The resulting numbers for each module in the year of study (or level of study in the case of flexible degree students) are totalled together and divided by 120 (the total number of credits for a year of study), resulting in an average mark. This calculation is done for both year two and year four and the resulting marks are averaged with the mark awarded for the year in industry, i.e. year three, using the weighting 20:10:70 for years two, three and four to arrive at an overall average.

(ii) The overall average for years two, three and four is rounded to the nearest whole number (decimal places up to four are rounded down, decimal places of five or more are rounded up). The initial indication of degree classification is then reached as follows:

70%+	1st
60-69%	2.1
50-59%	2.2
40-49%	3rd
Less than 40%	Pass degree

37f(iii). **Profiling**

(i) If a candidate achieves 67-69%, 57-59%, 47-49% or 37-39% by averaging, i.e. missing automatic classification by no more than 3%, they will have their mark profile considered.

(ii) If a candidate is profiled, s/he will be awarded the higher class if ***either*** 120 credits of study in years **two** and **four** are in a higher class than the overall average mark and of these at least 60 credits have been achieved in year **four *or*** 135 credits across years **two** and **four** are in a higher class than the overall average mark.

37f(iv). **Failure of Modules**

If a candidate meets the criteria set out above for the award of a classified honours degree but has failed a module or modules in their final year, the Board of Examiners, before recommending the award of a classified honours degree, must satisfy itself that the overall learning outcomes of the programme of study have been achieved. If, for example, without mitigating circumstances, a student has a mark of zero in a module due to non-attendance or failure to take the assessments, the Board of Examiners would be unlikely to recommend the award of an honours degree.

37g. **Pass (Non-Honours) degrees for students who have commenced Year 1 before September 2010**

Candidates who do not meet the criteria for a classified honours degree will be eligible for the award of a pass (non-honours) degree if they achieve the pass mark (40%) in modules totalling a minimum of 300 credits (irrespective of their overall average). This therefore includes:

- candidates who are not considered for a classified honours degree because they have not achieved the minimum 315 credits requirement;
- candidates who have achieved the minimum 315 credits requirement for an honours degree but whose average mark is less than 40% and who are *either* not eligible for profiling *or* are not eligible for a classified honours degree following profiling; and
- candidates with a failed module or modules in year four who have *prima facie* met the criteria for the award of a classified honours degree but to whom the Board of Examiners have declined to award a classified honours degree on the basis that they have failed to achieve the overall learning outcomes of the programme.

37h. **Final year re-sit examinations/assessments for students who have commenced Year 1 before September 2010**

Candidates who fail modules, on the following basis, may retake final year examinations/assessments at the next ordinary sitting of the examinations/assessments for those modules:

- Candidates who achieve the minimum 315 credits threshold for the award of a classified honours degree but whose average mark/module profile does not entitle them to a classified honours degree;
- Candidates who achieve 300 credits but fewer than 315 credits and are only therefore eligible for the award of a pass degree; and
- Candidates who have failed a module or modules in year four and have *prima facie* met the criteria for the award of a classified honours degree but to whom the Board of Examiners have declined to award a classified honours degree on the basis that they have failed to achieve the overall learning outcomes of the programme.

  Such candidates will be able to opt ***either*** to accept a pass degree ***or*** to retake the examinations/assessments for the failed modules. The marks for the modules in which examinations/assessments have been retaken will be capped at 40% for the purpose of calculating the average for the degree classification.

- Candidates who do not achieve enough credits for either an honours degree or a pass degree will be allowed to re-sit and, depending upon the results of the examinations/assessments which are retaken, may be eligible for the award of either a classified honours degree or a pass degree. The marks for the modules in which examinations/assessments have been retaken will be capped at 40% for the purpose of calculating the average for the degree classification.

Normally candidates will repeat the failed modules without attendance, unless the Board of Examiners determines that there are special circumstances which suggest that they should be allowed to repeat with attendance.

Candidates may opt not to repeat ***all*** their failed final year modules but rather to repeat the requisite number which, if passed at an appropriate level, would result in the award of a degree. However, they would be well advised to repeat all failed final year modules, in view of the fact that re-sit marks are capped at 40% and also that no further opportunity for retaking examinations/assessments would be available.

In circumstances where there have been significant changes to a module or a module is not offered in every year, special examinations/assessments must be set for candidates retaking the module.

Candidates who fail up to 45 credits in the final year but who still achieve an average which results in a classified honours degree will not be allowed to retake modules to gain a higher classification.

37i. **Final degree classification for students who have commenced Year 1 from September 2010**

The degree classification will be determined according to the University-wide formula for non-clinical undergraduate degrees. The system is based on the use of an overall average of the weighted marks for year two, year three, and year four as the first indicator of the degree classification, with a system of profiling being employed in cases of students whose averages are at the borderline between classifications.

37i(i). **Credit to be passed**

If modules totalling 330 credits or more **from years one, two and four** have been passed, i.e. each module has been awarded a mark of 40% or above (this includes compensated marks of 40% gained in years one and two) and all mandatory modules have been passed the candidate will be ***considered*** for the award of a classified honours degree. If modules totalling ***more than*** 30 credits in the final year have been failed, i.e. the module has been awarded a mark of less than 40%, the candidate will ***not*** be eligible for the award of an honours degree but may be eligible for the award of a pass (non-honours) degree.

37i(ii). **Averaging and Initial indication of degree classification**

(iii) A mark is allocated for each module **taken in years two and four**. Each mark is multiplied by the number of credits allocated to the module to which it relates. The resulting numbers for each module in the year of study (or level of study in the case of flexible degree students) are totalled together and divided by 120 (the total number of credits for a year of study), resulting in an average mark. This calculation is done for both year two and year four and the resulting marks are averaged with the mark awarded for the year in industry, i.e. year three, using the weighting 20:10:70 for years two, three and four to arrive at an overall average.

(iv) The overall average for years two, three and four is rounded to the nearest whole number (decimal places up to four are rounded down, decimal places of five or more are rounded up). The initial indication of degree classification is then reached as follows:

70%+	1st
60-69%	2.1
50-59%	2.2
40-49%	3rd
Less than 40%	Pass degree

37i(iii). **Profiling**

- If a candidate achieves 69%, 59%, 49% or 39% by averaging, i.e. missing automatic classification by no more than 1% (after rounding), they will have their mark profile considered.

- If a candidate is profiled, s/he will be awarded the higher class if ***either***

- 120 credits of study over years **two** and **four**are in the higher class and of these at least 30 must have been achieved in year **four**, **or;**
- at least 60 credits of study in the final year are in the higher class, **or;**
- at least 30 credits of study in the final year are in the higher class and the overall average for the year in industry was also in the higher class.

37i(iv). **Failure of Modules**

If a candidate meets the criteria set out above for the award of a classified honours degree but has failed a module or modules in their final year, the Board of Examiners, before recommending the award of a classified honours degree, must satisfy itself that the overall learning outcomes of the programme of study have been achieved *and* that the student had made a reasonable attempt at the assessment. If, for example, without mitigating circumstances, a student has a mark of zero in a module due to non-attendance or failure to take the assessments, the Board of Examiners would be unlikely to recommend the award of an honours degree.

37j. **Pass (Non-Honours) degrees for students who have commenced Year 1 from September 2010**

Candidates who do not meet the criteria for a classified honours degree will be eligible for the award of a pass (non-honours) degree if they achieve the pass mark (40% or above) in modules totalling a minimum of 300 credits from years one, two and four (irrespective of their overall average). This therefore includes:

- candidates who are not considered for a classified honours degree because they have not achieved the minimum 330 credits from years one, two and four;
- candidates who have achieved the minimum 330 credits from years one, two and four for an honours degree but whose average mark is less than 40% and who are *either* not eligible for profiling *or* are not eligible for a classified honours degree following profiling; and
- candidates with a failed module or modules in year four who have *prima facie* met the criteria for the award of a classified honours degree but to whom the Board of Examiners have declined to award a classified honours degree on the basis that they have failed to achieve the overall learning outcomes of the programme *or* the Board is not satisfied that the student made a reasonable attempt at the failed assessments.

37k. **Final year re-sit examinations/assessments for students who have commenced Year 1 from September 2010**

Final year examinations/assessments to may be retaken ***at the next ordinary sitting of the examinations/assessments for those modules*** by candidates who fail modules, on the following basis:

(i) Candidates

a. who achieve the minimum 330 credits requirement for the award of a classified honours degree but whose average mark/module profile does not entitle them to a classified honours degree; or
b. who achieve 300 credits but fewer than 330 credits and are only therefore eligible for the award of a pass degree; or
c. with a failed module or modules in year three who have *prima facie* met the criteria for the award of a classified honours degree but to whom the Board of Examiners has declined to award a classified honours degree on the basis that they have failed to achieve the overall learning outcomes of the programme or the Board is not satisfied that the student made a reasonable attempt at the failed assessments

will be able to opt ***either*** to accept a pass degree ***or*** to retake the examinations/assessments for the failed modules. The marks for the modules in which examinations/assessments have been retaken will be capped at 40% (or 50% for M level modules) for the purpose of calculating the average for the degree classification. All credits passed must be at the appropriate level, as detailed in Appendix A to the Code of Practice on Assessment, and must not include Year 0 credits.

(iii) Candidates who do not achieve enough credits for either an honours degree or a pass degree will be allowed to re-sit and, depending upon the results of the examinations/assessments which are retaken, may be eligible for the award of either a classified honours degree or a pass degree. The marks for the modules in which examinations/assessments have been retaken will be capped at 40% (or 50% for M level modules) for the purpose of calculating the average for the degree classification.

Where a student who, owing to ill-health or other mitigating circumstances, has not completed all assessments or whose performance in his/her assessments is considered by the Board of Examiners to have been affected by ill-health or other mitigating circumstances, the Board of Examiners should decide whether it has sufficient evidence of the student's achievement to determine the award. If the Mitigating Circumstances Committee considers that there is enough work (normally 60 credits) and that there is evidence that the programme's learning outcomes have been met, they will recommend the award which should be made (including the class of the award, if appropriate) and that the student be offered the option of **either** accepting that award **or** of re-taking/re-sitting the missed/affected assessments as a "first attempt" at the next ordinary sitting. Where the Board of Examiners decides to award a pass degree or considers that there is not sufficient evidence to determine the award but decides to offer an *aegrotat* degree, then the student concerned should be given the opportunity ***either*** to accept the pass or *aegrotat* degree ***or*** to take/retake the missed/failed assessments at the next ordinary sitting of those assessments. An *aegrotat* degree will only be offered where it is considered that a student's ongoing ill-health would preclude them from re-sitting/re-taking the missed/affected assessments.

Normally candidates will repeat the failed modules without attendance, unless the Board of Examiners determines that there are special circumstances which suggest that they should be allowed to repeat with attendance.

Candidates may opt not to repeat ***all*** their failed final year modules but rather to repeat the requisite number which, if passed at an appropriate level, would result in the award of a degree. However, they would be well advised to repeat all final year failed modules, in view of the fact that re-sit marks are capped at 40% (or 50% for M level modules) and also that **no further opportunity for retaking examinations/assessments would be available**.

In circumstances where there have been significant changes to a module or a module is not offered in every year, special examinations/assessments must be set for candidates retaking the module following failure in the final year. These examinations/assessments will take place when the examinations/assessments for the changed module take place or when the examinations/assessments for the module would have taken place were it being offered that year.

Candidates who fail up to 30 credits in the final year but who still achieve an average which results in a classified honours degree being awarded will **not** be allowed to retake modules to gain a higher classification.

37l. **Award of alternative exit qualifications**

If a student fails to meet the criteria for the award of a classified honours degree or a pass degree, or is unable to complete his or her degree programme, he or she may be awarded one of the following qualifications:

- Certificate in Higher Education – this will be awarded provided that the student has achieved a minimum of 120 credits at a level equivalent to the first year of an honours degree programme.
- Diploma in Higher Education – this will be awarded provided that the student has achieved a minimum of 240 credits, at least 120 of which must be at a level equivalent to the second year of an honours degree programme.

Students who withdraw from The University of Liverpool will be awarded either of the above qualifications provided that they meet the necessary criteria.

37m. **The Board of Examiners and the External Examiner**

The Department of Computer Science operates the following three Boards of Examiners for its on-campus undergraduate provision:

1. The Computer Science Undergraduate Module Review Board of Examiners
2. The Computer Science Undergraduate Progress Board of Examiners
3. The Computer Science Undergraduate Final Board of Examiners

These three Boards of Examiners are also referred to as Computer Science Undergraduate Boards of Examiners.

The Computer Science Undergraduate Module Board of Examiners consists of (a) the Chair of the Computer Science Undergraduate Boards of Examiners, (b) the External Examiner(s) responsible for undergraduate modules and undergraduate and integrated Master's programmes, (c) the Secretary of the Computer Science Undergraduate Boards of Examiners (an academic member of staff), (d) the Assessment Officer of the Department, (e) the Examinations Officer of the Department, (f) the Directors of Studies of undergraduate and integrated Master's programmes for which the Department is responsible, and (g) the module co-ordinators of undergraduate modules for which the Department is responsible.

The Computer Science Undergraduate Progress Board of Examiners consists of (a) the Chair of the Computer Science Undergraduate Boards of Examiners, (b) the External Examiner(s) responsible for undergraduate modules and undergraduate and integrated Master's programmes, (c) the Secretary of the Computer Science Undergraduate Boards of Examiners (an academic member of staff), (d) the Chair of the Computer Science Undergraduate Appeals and Progress Panel, (e) the Assessment Officer of the Department, (f) the Examinations Officer of the Department, (g) the Directors of Studies of undergraduate and integrated Master's programmes for which the Department is responsible, and (h) the module co-ordinators of level 0, 1, and 2 modules for which the Department is responsible.

The Computer Science Undergraduate Final Board of Examiners consists of (a) the Chair of the Computer Science Undergraduate Boards of Examiners, (b) the External Examiner(s) responsible for undergraduate modules and undergraduate and integrated Master's programmes, (c) the Secretary of the Computer Science Undergraduate Boards of Examiners (an academic member of staff), (d) the Chair of the Computer Science Undergraduate Appeals and Progress Panel, (e) the Assessment Officer of the Department, (f) the Examinations Officer of the Department, (g) the Directors of Studies of undergraduate and integrated Master's programmes for which the Department is responsible, (h) the module co-ordinators of level 3 modules for which the Department is responsible, and (i) the academic supervisors of Honours Year and MEng projects in the Department of Computer Science.

For the terms of reference of each of these Boards of Examiners see http://www.csc.liv.ac.uk/deptartment/admin/boe.html.

PART F: STUDENT REPRESENTATION AND FEEDBACK

38. **Student Representation and Feedback:**

Student representation and feedback are facilitated through:

1. The University Personal tutoring scheme.
2. The Department's Staff-Student Liaison Committee (which operates in accordance with the University's code of practice on student representation).
3. Module questionnaires completed by students at the end of each taught module.
4. Programme questionnaires completed by students at the end of each year of study.

Full details can be found in the Department of Computer Science Student Handbook.

The Department's Undergraduate Staff-Student Liaison Committee and its Postgraduate Staff-Student Liaison Committee currently hold joint meetings whenever possible in order to

facilitate a consolidated consideration of issues related to level 3 and level M modules taken by students on undergraduate, integrated Master's, and postgraduate taught programmes. In addition, the consideration of undergraduate issues benefits from the insights provided by postgraduate students while the consideration of postgraduate issues provides undergraduate students with an outlook on postgraduate study in the department.

PART G: STATUS OF PROFESSIONAL, STATUTORY OR REGULATORY BODY ACCREDITATION

39. Status of Professional, Statutory or Regulatory Body Accreditation

The programme is accredited to 2013 by the British Computer Society (BCS) as fully meeting the educational requirement for CITP registration and partially meeting the educational requirement for CEng registration. After its visit in October 2009, the BCS accreditation panel came to the conclusion that it 'was satisfied that the aims, content and underpinning of the programmes fell sufficiently within the Computing Benchmark' and recommended the above accreditation for a period of five intakes.

PART H: DIVERSITY & EQUALITY OF OPPORTUNITY AND WIDENING PARTICIPATION

40. Diversity & Equality of Opportunity and Widening Participation

The programme design, structure and content are consistent and compliant with the University's Diversity and Equality of Opportunity Policy.

ANNEX 1

This Annex 1 is to be used to record all modifications made to the programme.

Please indicate in the table below any changes or revisions that have been made to the programme, to be completed each time an amendment is made to an existing programme:

Description of modification (Please also include details of any student consultation undertaken or student consent to the change that was required.)	**Minor or major modification**	**Date approved by FAQSC**	**Date approved by UAQSC (if applicable)**
Aug 11: Changes to programme structure for 2011-12: • Addition of modules: COMP104 (required/optional), COMP108 (required), COMP118 (required), COMP281 (optional), COMP282 (optional), COMP282 (optional), COMP283 (optional), COMP284 (optional), COMP329 (optional). • Removal of modules: COMP112, COMP114, COMP204 (replaced by COMP104). The Computer Science Staff-Student Liaison Committee was presented with draft versions of the new programme structures for **all undergraduate programmes** and a number of issues relating to the introduction of new modules in years 1, 2, 4 and the withdrawal of some year 1 modules have been discussed. The intended changes to the curriculum were also presented to our Industrial Liaison Committee at a meeting in January 2011. The proposals, in particular, the introduction of 'Technical Skills' modules (COMP281-284), were positively received.	**Minor**		
Nov 11: Amendment to entry requirements	**Minor**		