Programme Specification
Undergraduate

Applicable to all non-clinical undergraduate programmes*

Please click here for guidance on completing this specification template.

***Excluding Integrated Master's degrees.**

Part A: Programme Summary Information

1.	**Title of programme:**	BSc Financial Computing with a Year in Industry	
2.	**Programme Code:**	G3N4	
3.	**Entry Award:**	**Credit:**	**Level:**
☐	BA (Hons)		
☒	BSc (Hons)	480	At least 90 credits at level 6 Year 1: the majority of credit at level 4 Year 2: the majority of credit at level 5
☐	Other (please specify below):		
4.	**Exit Awards:**	**Credit:**	**Level:**
☒	Diploma in Higher Education (Dip HE)	240	Year 1: the majority of credit at level 4 Year 2: the majority of credit at level 5
☒	Certificate in Higher Education (Cert HE)	120	The majority of credit at level 4
5.	**Date of first intake:**	September 2016	
6.	**Frequency of intake:**	Annually in September/October	
7.	**Duration and mode of study:**	Full time, 4 years	
8.	**Applicable framework:**	Model for Non-Clinical First Degree Programmes	
	Framework exemption	☒ No (please go to section 9)	

	required: Please indicate the applicable boxes:	☐ Yes (please provide a brief summary below)
	Date exemption approved:	
9.	**Applicable Ordinance:**	Ordinance 37 General Ordinance for Undergraduate Degrees Ordinance 39 Diploma in Higher Education Ordinance 40 Certificate in Higher Education
	New/revised Ordinance required: Please indicate the applicable boxes:	☒ No (please go to section 10) ☐ Yes (please provide a brief summary below)
	Date new/revised Ordinance approved by Council:	
10.	**Faculty:**	Faculty of Science and Engineering
11:	**Level 2 School/Institute:**	School of Electrical Engineering, Electronics and Computer Science
12.	**Level 1 unit:**	Department of Computer Science
13.	**Campus:**	Liverpool campus
14.	**Other contributors from UoL:**	Management School
15:	**Teaching other than at UoL:**	None
16:	**Director of Studies:**	Dr Giorgos Christodoulou (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):** Name Institution Position	Professor Richard Jones, University of Kent (Subject Level); Professor Francesca Toni, Imperial College, London (Subject Level)
20.	**Professional, Statutory or Regulatory body:**	None
21:	**QAA Subject benchmark Statements(s):**	Computing (Feb 2016) Finance (Feb 2016)

22. Other reference points:	BCS Course Guidelines and Course Accreditation Criteria
23. Fees:	Standard Undergraduate Fees
24. Additional costs to the student:	During the course of students would be expected to spend approximately £37.29 on printing. Students would not be required to purchase text books for any recommended or essential reading as they can be obtained from the University library. If students wish to purchase their own text books for some modules the cost is approximately between £45-£50 per book. Students would be expected to be paid a salary during their industrial placement. However, the student would be responsible for any additional costs such as associated with obtaining an industrial placement and relocation. A calculator might be required costing up to £15 new.
25: University Approval Panel approval:	

Part B: Programme Aims & Objectives

26. Aims of the Programme

Financial Computing is the provision of financial services and markets using electronic communication and computation, including, for example, electronic payments systems, the operation of financial services firms and the operation of markets.

The combination of faster computers, more data storage, and the internet have revolutionized many aspects of the economy. For example, in financial markets, computer programs have to a significant extent replaced human traders. As another example, for a broad range of businesses the internet has become one of their main advertising channel. In fact, the main revenue of internet giants like Google and Yahoo comes from internet advertising, by means of auctions that are completely automated and run by computer programs. Furthermore, computer systems, the internet and related technologies act as new distribution channels for financial services firms and allow those firms to efficiently create and tailor new products to the needs of their customers. At the same time, internet technologies allow customers easy access to financial information and services from a wide range of

	sources and providers, thus breaking down barriers to competition between financial services firms. These developments have created a very strong demand for graduates that have both the necessary computing skills and a knowledge of the underlying financial markets, products and services. This course is designed to provide our students with the background and skills to address these demands.
No.	**Aim:**
1	To provide students with a good understanding of several areas of Information Management and Information Systems with emphasis on applications to Financial Computing and, more generally, to e-Business;
2	To impart a broad knowledge of accounting, finance, and the use of quantitative methods in the modelling of financial products
3	To enable students to become multi-skilled professionals in the field of Information and Information Systems with emphasis on financial computing who are able to work independently as well as in teams in both research and development/application of financial computing software.
4	To provide students with practical experience of computing within commercial and financial settings.
27.	**Learning Outcomes**
No.	**Learning outcomes – Bachelor's Honour's degree**
	The subject-based learning outcomes outlined below fall within the QAA Subject Benchmark for Computing, the QAA Subject Benchmark for Accounting, the draft QAA Subject Benchmark for Finance, and British Computer Society Accreditation Criteria.
1	**Cognitive Abilities**
1.1	Demonstrate systematic knowledge and understanding of essential facts, concepts, principles and theories relating to computing and computer applications as appropriate to the general programme of study and their chosen specialisation.
1.2	A detailed knowledge how to use 1.1 in the modelling and design of computer-based systems for the purposes of comprehension, communication, prediction and the understanding of trade-offs.
1.3	Recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solution.
1.4	Analyse the extent to which a computer-based system meets the criteria defined for its current use and future development.
1.5	Deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer-based systems.
1.6	Effectively present to a range of audiences (orally, electronically or in writing) rational and reasoned arguments that address a given information handling problem or opportunity, including a critical assessment of the impact of new technologies.
1.7	Recognise the professional, moral and ethical issues involved in the exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.
1.8	Demonstrate systematic knowledge and understanding of the use of scientific principles in the creation, use and support of computer-based systems, in

	particular, financial computing systems.
1.9	Demonstrate systematic knowledge and understanding of mathematical principles necessary to underpin their programme of study and the ability to apply mathematical methods, tools and notations proficiently in the analysis and solution to computing problems.
1.10	Detailed understanding of the nature of the contexts in which finance can be seen as operating, including knowledge of the institutional framework necessary for understanding the role, operation and function of markets and financial institutions.
1.11	Demonstrate detailed knowledge of the major theoretical tools and theories of finance, and their relevance and application to theoretical and practical problems.
1.12	Systematic understanding of the factors influencing the investment behaviour and opportunities of private individuals.
1.13	Detailed understanding of financial service activity in the economy, and an appreciation of how finance theory and evidence can be employed to interpret these services.
1.14	A systematic understanding of the world of business and commerce which underpins financial computing.
2	**Practical Abilities**
2.1	Specify, design and construct computer-based software systems, in particular, in the context of their chosen specialisation.
2.2	Critically evaluate and analyse traditional and computer-based systems related to financial computing, 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 the construction and documentation of computer applications, with particular 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.
2.6	Acquire the knowledge necessary for the design and development of computer-based systems in general and financial computing systems in particular.
2.7	Systematic knowledge to investigate and define a problem, identify constraints, understand customer and user needs, identify and manage cost drivers, ensure fitness for purpose and manage the design process and evaluate outcomes.
2.8	A systematic knowledge to interpret financial data including that arising in the context of the firm or household from accounting statements and data generated in financial markets.
No.	**Learning Outcomes** **Learning outcomes – Bachelor's Non-Honour's degree**
	By completing Year 4 of the programme, students will have attained the large majority of the outcomes of the Bachelor's Honours degree programme but will not have attained some outcomes at an appropriate level either as a consequence of passing insufficient module credit or by failing to demonstrate

	achievement of all learning outcomes specific to the individual project module. Students will have developed an understanding of financial computing, some of it at the current boundaries of the discipline. Through this, the student will have developed analytical techniques and problem-solving skills that can be applied in many types of discipline related and generic employment. The student will be able to evaluate evidence, arguments and assumptions, to reach sound judgements and to communicate them effectively. Students will have the qualities needed for employment in situations requiring the exercise of personal responsibility, and decision making in complex and unpredictable circumstances. Students will be expected to achieve the majority of the learning outcomes outlined in Section 27.

	Learning Outcomes
No.	**Learning outcomes – Diploma in Higher Education award**
1.15	Demonstrate good knowledge and understanding of essential facts, concepts, principles and theories relating to computing and computer applications as appropriate to the general programme of study and their chosen specialisation.
1.16	A good knowledge how to use 1.16 in the modelling and design of computer-based systems for the purposes of comprehension, communication, prediction and the understanding of trade-offs.
1.17	Recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solution.
1.18	Analyse the extent to which a computer-based system meets the criteria defined for its current use and future development.
1.19	Deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer-based systems.
1.20	Effectively present to specialist and non-specialist audiences (orally, electronically or in writing) rational and reasoned arguments that address a given information handling problem or opportunity, including assessment of the impact of new technologies.
1.21	Recognise the professional, moral and ethical issues involved in the exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.
1.22	Demonstrate good knowledge and understanding of the use of scientific principles in the creation, use and support of computer-based systems, in particular, financial computing systems.
1.23	Demonstrate good knowledge and understanding of mathematical principles necessary to underpin their programme of study and the ability to apply mathematical methods, tools and notations proficiently in the analysis and solution to computing problems.
1.24	Demonstrate good knowledge and understanding of the main current technical language and practices of accounting.
1.25	Demonstrate good knowledge and understanding of contemporary theories and empirical evidence concerning accounting in at least one of its contexts.
1.26	Appreciate the nature of the contexts in which finance can be seen as operating, including good knowledge of the institutional framework necessary for understanding the role, operation and function of markets and financial institutions.

1.27	Demonstrate good knowledge of the major theoretical tools and theories of finance, and their relevance and application to theoretical and practical problems.
1.28	Good understanding of the factors influencing the investment behaviour and opportunities of private individuals.
1.29	Good understanding of financial service activity in the economy, and an appreciation of how finance theory and evidence can be employed to interpret these services.
1.30	An awareness of the world of business and commerce which underpins financial computing.
	Practical Abilities
2.9	Specify, design and construct computer-based software systems, in particular, in the context of their chosen specialisation.
2.10	Evaluate and analyse traditional and computer-based systems related to financial computing, 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.
2.11	Deploy effectively the tools used for the construction and documentation of computer applications, with particular emphasis on understanding the whole process involved in the effective deployment of computers to solve practical problems.
2.12	Work as a member of a development team, recognising the different roles within a team and different ways of organising teams.
2.13	Operate computing equipment effectively, taking into account its logical and physical properties.
2.14	Acquire the knowledge necessary for the design and development of computer-based systems in general and financial computing systems in particular.
2.15	A good understanding to define a problem, identify constraints, understand customer and user needs, identify and manage cost drivers, ensure fitness for purpose and manage the design process and evaluate outcomes.
2.16	A good knowledge to interpret financial data including that arising in the context of the firm or household from accounting statements and data generated in financial markets.
	Learning Outcomes
No.	**Learning outcomes – Certificate in Higher Education award**
1.31	Demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to computing and computer applications as appropriate to the general programme of study and their chosen specialisation.
1.32	A knowledge how to use 1.31 in the modelling and design of computer-based systems for the purposes of comprehension, communication, prediction and the understanding of trade-offs.
1.33	Recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solution.
1.34	Analyse the extent to which a computer-based system meets the criteria defined for its current use and future development.

1.35	Deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer-based systems.
1.36	Communicate (orally, electronically or in writing) rational and reasoned arguments that address a given information handling problem or opportunity, including assessment of the impact of new technologies.
1.37	Recognise the professional, moral and ethical issues involved in the exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.
1.38	Demonstrate basic knowledge and understanding of the use of scientific principles in the creation, use and support of computer-based systems, in particular, financial computing systems.
1.39	Demonstrate knowledge and understanding of mathematical principles necessary to underpin their programme of study and the ability to apply mathematical methods, tools and notations in the analysis and solution to computing problems.
1.40	Demonstrate knowledge and understanding of the main current technical language and practices of accounting.
1.41	Awareness of the nature of the contexts in which finance can be seen as operating, including knowledge of the institutional framework necessary for understanding the role, operation and function of markets and financial institutions.
1.42	Demonstrate basic knowledge of the major theoretical tools and theories of finance, and their relevance and application to theoretical and practical problems.
1.43	Basic understanding of the factors influencing the investment behaviour and opportunities of private individuals.
1.44	Basic understanding of financial service activity in the economy, and an appreciation of how finance theory and evidence can be employed to interpret these services.
	Practical Abilities
2.17	Specify, design and construct computer-based software systems, in particular, in the context of their chosen specialisation.
2.18	Evaluate and analyse traditional and computer-based systems related to financial computing, 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.
2.19	Deploy the tools used for the construction and documentation of computer applications, and understanding the whole process involved in the deployment of computers to solve practical problems.
2.20	Operate computing equipment, taking into account its logical and physical properties.
2.21	Acquire the knowledge necessary for the design and development of computer-based systems in general and financial computing systems in particular.
2.22	An understanding how to define a problem, identify constraints, understand customer and user needs, identify and manage cost drivers, ensure fitness for purpose and manage the design process and evaluate outcomes.
2.23	Knowledge to interpret financial data including that arising in the context of the firm or household from accounting statements and data generated in financial markets.

2.24	Ability to participate in a development team, with an awareness of the different roles within a team and different ways of organising teams.

27a. Mapping of learning outcomes:

Learning outcome No.	Module(s) in which this will be delivered	Mode of assessing achievement of learning outcome	PSRB/Subject benchmark statement (if applicable)
1.1	COMP310, COMP315 COMP323, COMP326, COMP331 COMP396	Written examinations Practical assessments/ Written examination Practical assessments/ Group reports/Presentation/ Demonstration	
1.2	COMP310, COMP315 COMP323, COMP326, COMP331 COMP396 EBUS301	Written examinations Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration Coursework	
1.3	ACFI302, ACFI314 ACFI341, COMP326, COMP331 COMP310, COMP315 COMP396 EBUS301	Coursework and written examinations Written examinations Practical assessments/ Group reports/Presentation/ Demonstration Coursework	
1.4	COMP310, COMP315 COMP396	Written examinations Practical assessments/ Group reports/Presentation/ Demonstration	
1.5	COMP315, COMP331 COMP396 EBUS301, COMP331	Written examination Practical assessments/ Group reports/Presentation/ Demonstration Coursework	
1.6	COMP323	Practical assessments/ Written examination	

	COMP396 ACFI302, ACFI314 ACFI341 ACFI309, COMP310 COMP315	Practical assessments/ Group reports/ Presentation/ Demonstration Coursework and written examinations Written examinations	
1.7	COMP396	Practical assessments/ Group reports/Presentation/ Demonstration	
1.8	COMP310, COMP315 COMP323, COMP326 COMP396	Written examinations Practical assessments/ Written examination Practical assessments/ Group reports/ Presentation/ Demonstration	
1.9	COMP310, COMP315 COMP323, COMP326 COMP331 EBUS301	Written examinations Practical assessments/ Written examination Coursework	
1.10	ACFI314, ACFI341 COMP396	Coursework and written examinations Practical assessments/ Group reports/Presentation/ Demonstration	
1.11	ACFI314, ACFI341 COMP396 EBUS301 MKIB351	Coursework and written examinations Practical assessments/ Group reports/Presentation/ Demonstration Coursework Written examination/report	
1.12	ACFI314, ACFI341 COMP396	Coursework and written examinations Practical assessment/ Group reports/Presentation/ Demonstration	
1.13	ACFI314, ACFI341 COMP396	Coursework and written examinations Practical assessments/ Group reports/Presentation/ Demonstration	

1.14	COMP299	Reports/Presentation/Overall performance on project work	
1.15	COMP201, COMP207 COMP226 COMP215 COMP283, COMP284 COMP285	Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration Practical assessments	
1.16	COMP215 COMP283, COMP284 COMP285	Practical assessments/ Group reports/ Presentation/ Demonstration Practical assessments	
1.17	ACFI213 COMP201, COMP207 COMP226 COMP215 COMP283, COMP284 COMP285 MKIB225	Written examination Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration Practical assessments Coursework and written examination	
1.18	COMP201, COMP207 COMP226 COMP215 COMP283, COMP284 COMP285	Practical assessments/ Written examinations Practical assessments/Group reports/Presentation/ Demonstration Practical assessments	
1.19	COMP201, COMP207 COMP226 COMP215 COMP283, COMP284 COMP285	Practical assessments/ Written examinations Practical assessments/ Group reports/ Presentation/ Demonstration Practical assessments	
1.20	COMP201, COMP207 COMP226 COMP215	Practical assessments/ Written examinations Practical assessments/ Group reports/ Presentation/ Demonstration	
1.21	COMP215	Practical assessments/ Group reports/ Presentation/ Demonstration	

	COMP299	Reports/Presentation/Overall performance on project work	
1.22	COMP201, COMP207 COMP226 COMP215	Practical assessments/Written examinations Practical assessments/Group reports/ Presentation/ Demonstration	
1.23	COMP226 ECON241	Practical assessments/ Written examination Written examination	
1.24	ACFI201, ACFI213 ACFI202 COMP215	Written examinations Coursework and written examination Practical assessments/ Group reports/Presentation/ Demonstration	
1.25	ACFI201, ACFI213 COMP215	Written examinations Practical assessments/ Group reports/Presentation/ Demonstration	
1.26	ACFI213, ECON241 COMP215	Written examinations Practical assessments/ Group reports/Presentation/ Demonstration	
1.27	ACFI213, ECON241 COMP215 COMP226	Written examinations Practical assessments/Group reports/Presentation/ Demonstration Practical assessments/Written examination	
1.28	ACFI213, ECON241	Written examinations	
1.29	ACFI213, ECON241	Written examinations	
1.30	COMP299	Reports/Presentation/Overall performance on project work	
1.31	COMP101, COMP105, COMP122 COMP102, COMP106, COMP107	Practical assessments Practical assessments/ Written examinations Practical assessments/ Essays/Presentation	

	COMP109, COMP116	Class tests/Tutorial contributions/Written examination	
1.32	COMP101, COMP105, COMP122 COMP102, COMP106, COMP107	Practical assessments Practical assessments/ Written examinations Practical assessments/ Essays/Presentation	
1.33	COMP101, COMP105 COMP106 COMP107	Practical assessments Practical assessments/ Written examinations Practical assessments/ Essays/Presentation	
1.34	COMP101, COMP105	Practical assessments	
1.35	COMP101, COMP105 COMP102, COMP106, COMP107 COMP109, COMP116	Practical assessments Practical assessments/ Written examinations Practical assessments/ Essays/Presentation Class tests/Tutorial contributions/Written examination	
1.36	COMP101, COMP105 COMP102, COMP106, COMP107 COMP109, COMP116	Practical assessments Practical assessments/ Written examinations Practical assessments/ Essays/Presentation Class tests/Tutorial contributions/Written examination	
1.37	COMP102 COMP299 COMP107	Practical assessments/ Written examinations Reports/Presentation/Overall performance on project work Practical assessments/ Essays/Presentation	
1.38	COMP101, COMP105 COMP102, COMP106, COMP107	Practical assessments Practical assessments/ Written examinations Practical assessments/ Essays/Presentation	
1.39	COMP109, COMP116	Class tests/Tutorial contributions/Written examination	

1.40	ACFI101 ACFI102, ACFI103	Coursework and written examinations Written examinations	
1.41	ACFI103	Written examination	
1.42	ACFI103	Written examination	
1.43	ACFI103	Written examination	
1.44	ACFI103	Written examination	
2.1	COMP323, COMP326, COMP331 COMP396	Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration	
2.2	COMP323, COMP326 COMP331 COMP396 EBUS301	Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration Coursework	
2.3	COMP323, COMP326 COMP331 COMP396	Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration	
2.4	COMP396	Practical assessments/ Group reports/Presentation/ Demonstration	
2.5	COMP323 COMP396 COMP331	Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration Practical assessments	
2.6	EBUS301	Coursework	
2.7	ACFI302, ACFI341 ACFI309	Coursework and written examination Written examination	

	COMP323, COMP326 COMP331 COMP396	Practical assessments/ Written examination Practical assessments/ Group reports/Presentation/ Demonstration	
2.8	ACFI302, ACFI314 ACFI341 ACFI309 MKIB351	Coursework and written examination Written examinations Written examination/report	
2.9	COMP201, COMP207 COMP215 COMP283, COMP284 COMP285	Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration Practical assessments	
2.10	COMP201, COMP207 COMP215 COMP283, COMP284 COMP285 COMP299	Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration Practical assessments Reports/Presentation/Overall performance on project work	
2.11	COMP201, COMP207 COMP215 COMP283, COMP284 COMP285	Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration Practical assessments	
2.12	COMP215	Practical assessments/ Group reports/Presentation/ Demonstration	
2.13	COMP201, COMP207 COMP215 COMP283, COMP284 COMP285	Practical assessments/ Written examinations Practical assessments/ Group reports/Presentation/ Demonstration Practical assessments	
2.14	COMP201, COMP207 COMP283, COMP284	Coursework and written examinations Practical assessments	

2.15	COMP201, COMP207 COMP215 COMP283, COMP284 COMP285	Practical assessments/ Written examination Practical assessments/ Group reports/Presentation/ Demonstration Practical assessment	
2.16	ACFI201,ECON241 ACFI202	Written examinations Coursework and written examination	
2.17	COMP101, COMP105 COMP102, COMP106, COMP107	Practical assessments Practical assessments/ Written examinations Practical assessments/ Essays/Presentation	
2.18	COMP101, COMP105 COMP299	Practical assessments Reports/Presentation/Overall performance on project work	
2.19	COMP101, COMP105 COMP102, COMP106, COMP107	Practical assessments Practical assessments/ Written examinations Practical assessments/ Essays/Presentation	
2.20	COMP101, COMP105 COMP102, COMP106, COMP107	Practical assessments Practical assessments/ Written examinations Practical assessments/ Essays/Presentation	
2.21	COMP101, COMP105	Practical assessment	
2.22	COMP101, COMP105 COMP102, COMP106, COMP107	Practical assessment Practical assessments/ Written examinations Practical assessments/ Essays/Presentation	
2.23	ACFI101 ACFI102, ACFI103	Coursework and written examination Written examinations	
2.24	COMP107	Practical assessments/ Group reports/Presentation/ Demonstration	

28.	**Skills and Other Attributes**
No.	**Skills and attributes:**
	The key skills outlined below fall within the QAA Subject Benchmark for Computing, the QAA Subject Benchmark for Accounting, the draft QAA Subject

	Benchmark for Finance, and British Computer Society Accreditation Criteria.
1	Effective information-retrieval skills (including the use of browsers, search engines and catalogues).
2	Numeracy in both understanding and presenting cases involving a quantitative dimension
3	The ability to use general IT facilities effectively.
4	The ability to manage their own learning and development, and time management and organisational skills.
5	An appreciation of the need for continuing professional development in recognition for the need for lifelong learning.
6	A capacity for the critical evaluation of arguments and evidence.
7	An ability to analyse and draw reasoned conclusions concerning structured and, to a more limited extent, unstructured problems from a given set of data and from data which must be acquired by the student.
8	Experience of working in groups, and other interpersonal skills, and in presenting the results of their work orally as well as in written form.

28a. Mapping of skills and other attributes:

Skills and other attributes No.	Module(s) in which this will be delivered and assessed	Learning skills, research skills, employability skills	Mode of assessing achievement of the skill or other attribute
1	COMP101, COMP105, COMP122, COMP283 COMP284, COMP285	Learning skills	Practical assessments
	COMP102, COMP106, COMP201, COMP207 COMP226, COMP323		Practical assessments/ Written examinations
	COMP107		Practical assessments/ Essays/Presentation
	MKIB225		Coursework and written examination
	COMP215, COMP396		Practical assessments/ Group reports/ Presentation/Demonstration
2	ACFI101, ACFI202 ACFI302, ACFI314, ACFI341	Research skills	Coursework and written examination
	ACFI102, ACFI103 ACFI201, ACFI213 ACFI309, COMP310 COMP315, ECON241		Written examinations
	COMP102, COMP201 COMP207, COMP226		Practical assessments/ Written examination
	COMP109, COMP116		Class tests/Tutorial contributions/Written examination

	COMP396 MKIB351		Practical assessments/ Group reports/ Presentation/Demonstration Written examination/ Report
3	COMP101, COMP105, COMP107, COMP122, COMP283 COMP284, COMP285, COMP331 COMP102, COMP106, COMP107 COMP201, COMP207 COMP226, COMP323, COMP215, COMP396 ACFI201, ACFI213 ACFI202, MKIB225 EBUS301 MKIB351	Employability skills	Practical assessments Practical assessments/ Written examinations Practical assessments/ Group reports/ Presentation/ Demonstration Written examinations Coursework and written examinations Coursework Written examination/ Report
4	ACFI101, ECON121 ACFI202, MKIB225 ACFI102, ACFI103 ACFI201, ACFI213 ACFI309, COMP310 COMP315 COMP101, COMP105, COMP122, COMP283 COMP284, COMP285, COMP107 COMP102, COMP106, COMP201, COMP207 COMP226, COMP323, COMP326, COMP331 COMP109, COMP116 COMP215, COMP396	Learning skills	Coursework and written examinations Written examination Practical assessments Practical assessments/Written examination Class tests/Tutorial contributions/Written examination Practical assessments/ Group reports/ Presentation/ Demonstration
5	ACFI302 COMP201, COMP207 COMP226	Employability skills	Coursework and written examination Practical assessments/ Written examination

	COMP215, COMP396 COMP315 EBUS301		Practical assessments/ Group reports/ Presentation/ Demonstration Written examination Coursework
6	ACFI201, ACFI213, COMP310, COMP315 ECON241 ACFI202, ACFI302 ACFI314, ACFI341 MKIB225 COMP106, COMP323, COMP326, COMP331 COMP396 MKIB351	Research skills	Written examinations Coursework and written examinations Practical assessments/ Written examinations Practical assessment/ Group reports/ Presentation/ Demonstration Written examination/ Report
7	ACFI102, ACFI201 ACFI213, ACFI309 COMP310, ECON241 ACFI202, ACFI302, ACFI314, ACFI341 ECON121, MKIB225 MKIB351 COMP396	Research Skills	Written examinations Coursework and written examinations Written examination/ Report Practical assessment/Group reports/Presentation/ Demonstration
8	COMP215, COMP396 MKIB225 MKIB351	Employability skills Research skills	Practical assessments/Group reports/Presentation/ Demonstration Coursework and written examination Written examination / Report

29. Career opportunities:

The programme is directed at all career opportunities within the general domain of information management and information systems and, in particular, e-Finance. These include technical and managerial positions in the IT development and service industry, in particular, those that provide software and services to the financial services industry. Also included are specialist positions in the financial services industry involving the development, deployment or maintenance of financial computing software. In addition, the programme will provide a sound basis for further studies at Master and PhD level in Information Management and Information Systems, Computer

Science, Financial Computing, Finance, and Accounting.

Part C: Entrance Requirements

30. Academic Requirements:

The typical offer for entrance to this degree programme in the Department of Computer Science is three subjects at GCE A level with grades AAB or better, including at least one of the following subjects: Mathematics, Further Mathematics, Physics, Computer Science, Computing. All students are also expected to have GCSE English Language at grade C or if the new GCSE a score of 4 or above.

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, for details see https://www.liverpool.ac.uk/study/international/apply/english-language/).

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:

In 2016/17, the cohort of students admitted in September 2016 will complete the following (please see the final 2016/17 G3N4 Programme Specification for the mapping of skills and Learning Outcomes)

(•) *indicates a required module and* (+) *indicates a mandatory module*

YEAR 1							
Module Code	***Module Title***	***Credit Value***	***Level***	***Co-requisites***	***Pre-requisites***	***Pre-requisite for****	***Parent Dept***
Semester 1							
ACFI101	*Introduction to Financial Accounting (•)*	*15*	*4*	-	-	-	*ULMS*
COMP101	*Introduction to Programming in Java (•)*	*15*	*4*	-	-	*COMP102 COMP106 COMP201 COMP207*	*CS*

						COMP210 COMP215	
COMP109	*Foundations of Computer Science (•)*	*15*	*4*	*COMP101*	*-*	*COMP108 COMP118 COMP202 COMP218*	*CS*
ECON121	*Principles of Microeconomics*	*15*	*4*	*-*	*-*	*ECON241*	*ULMS*
Semester 1 and 2							
COMP102	*Introduction to Databases (•)*	*15*	*4*	*COMP101*	*-*	*COMP207 COMP215*	*CS*
Semester 2							
ACFI102	*Introduction to Management Accounting (•)*	*15*	*4*	*-*	*-*	*-*	*ULMS*
ACFI103	*Introduction to Finance (•)*	*15*	*4*	*-*	*-*	*ACFI213 ECON241*	*ULMS*
COMP106	*Human-Centric Computing (•)*	*15*	*4*	*-*	*COMP101*	*-*	*CS*

**May also be a pre-requisite for modules on other programmes*

YEAR 2							
Module Code	*Module Title*	*Credit Value*	*Level*	*Co-requisite*	*Pre-requisites*	*Pre-requisite for*	*Parent Dept*
Semester 1							
ACFI201	*Financial Reporting I (•)*	*15*	*5*	*-*	*ACFI101*	*ACFI202 ACFI302 ACFI309*	*ULMS*
ACFI213	*Corporate Financial Management for non-specialist students (•)*	*15*	*5*	*-*	*ACFI102 ACFI103*	*ACFI314 ACFI341*	*ULMS*
COMP201	*Software Engineering I (•)*	*15*	*5*	*-*	*COMP101 COMP102*	*COMP215*	*CS*
COMP207	*Database Development (•)*	*15*	*5*	*-*	*COMP101 COMP102*	*None*	*CS*
Semester 2							
COMP215	*eCommerce Group Project (•)*	*15*	*5*	*-*	*-*	*COMP396*	*CS*

COMP226	*Computer-Based Trading in Financial Markets (•)*	*15*	*5*	*-*	*-*	*COMP396*	*CS*
ECON241	*Securities Markets (•)*	*15*	*5*	*-*	*ACFI103 ECON121*	*-*	*ULMS*
Plus options totalling 15 credits from the following five modules provided pre-requisites are satisfied:							
ACFI202	*Accounting Theory*	*15*	*5*	*-*	*ACFI201*	*-*	*ULMS*
COMP283	*Applied Database Management*	*7.5*	*5*	*-*	*COMP102 COMP207*	*None*	*CS*
COMP284	*Scripting Languages*	*7.5*	*5*	*-*	*COMP101 COMP102*	*None*	*CS*
COMP285	*Computer Aided Software Development*	*7.5*	*5*	*-*	*COMP101 COMP201*	*None*	*CS*
MKIB225	*International Business*	*15*	*5*	*-*	*-*	*MKIB351*	*ULMS*

**May also be a pre-requisite for modules on other programmes*

YEAR 3							
Module Code	***Module Title***	***Credit Value***	***Level***	***Sem-ester***	***Pre-requisites***	***Pre-requisite for***	***Parent Dept***
COMP299	*Industrial Placement Year 3*	*120*	*5*	*1+2*	*COMP110 COMP102, COMP104, COMP110 or equivalents; COMP106 and COMP108 recommended*	*-*	*CS*

YEAR 4							
Module Code	***Module Title***	***Credit Value***	***Level***	***Co-requisite***	***Pre-requisites***	***Pre-requisite for***	***Parent Dept***
Semester 1 and 2							
COMP396	*Honours Year Automated Trading Project (+)*	*30*	*6*	*-*	*COMP226 Yr 2 of N300*	*-*	*CS*
Semester 1							
ACFI314	*Quantitative Business Finance (•)*	*15*	*6*	*-*	*ACFI213*	*ACFI341*	*ULMS*
COMP323	*Introduction to Computational Game Theory*	*15*	*6*		*COMP109 or equivalent*	*COMP326*	*CS*

	(•)				*mathe-matical module*		
Plus options totalling 15 credits from the following five modules provided pre-requisites are satisfied:							
ACFI309	*Financial Reporting 2*	*15*	*6*	*-*	*ACFI101 ACFI201*	*ACFI302*	*ULMS*
COMP319	*Software Engineering II*	*15*	*6*	*-*	*COMP201*	*-*	*CS*
COMP331	*Optimization*	*15*	*6*	*-*	*COMP109*	*-*	*CS*
EBUS301	*E-Business Models and Strategy*	*15*	*6*	*-*	*-*	*-*	*ULMS*
MKIB351	*Global Strategic Management*	*15*	*6*	*-*	*MKIB225*	*-*	*ULMS*
Semester 2							
ACFI341	*Finance and Markets (•)*	*15*	*6*	*-*	*ACFI314*	*-*	*ULMS*
COMP315	*Technologies for E-Commerce (•)*	*15*	*6*	*-*	*COMP207*	*-*	*CS*
Plus options totalling 15 credits from the following three modules provided pre-requisites are satisfied							
ACFI302	*Corporate Reporting and Analysis*	*15*	*6*	*-*	*ACFI101 ACFI201 ACFI309*	*-*	*ULMS*
COMP310	*Multi-Agent Systems*	*15*	*6*	*-*	*-*	*-*	*CS*
COMP326	*Computational Game Theory and Mechanism Design*	*15*	*6*	*-*	*COMP323 COMP109 or equivalent mathe-matical module*	*-*	*CS*

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

Students admitted from September 2017 (effective 2017/18) will complete the following:

Students are expected to pursue the following BSc programme structure:

In Year 1 students will study one of the modules COMP101 (Intro. to Programming) or COMP105 (Programming Language Paradigms). The option deemed most suitable will be determined, typically (although not exclusively) through indications of reasonable prior exposure to programming. For example, students who have obtained a recognised entry qualification in a computing related subject (eg Computer Science A-level) will study COMP105. Students without such background will normally study COMP101, however, may (at the discretion of Programme Director of Studies) be permitted to enrol on COMP105

instead. All other Year 1 modules are required and the same for all programmes.

(•) *indicates a required module and* (+) *indicates a mandatory module*

YEAR 1							
Module Code	**Module Title**	**Credit Value**	**Level**	**Co-requisites**	**Pre-requisites**	**Pre-requisite for***	**Parent Dept**
Semester 1							
ACFI101	Introduction to Financial Accounting (•)	15	4	-	-	-	ULMS
COMP101 **or** COMP105	Introduction to Programming (•) Programming Language Paradigms (•)	15 15	4 4	- -	- A-level Computer Science expected	COMP122 COMP122	CS CS
COMP107	Graduates for the Digital Society (•)	15	4	-	-	COMP201, COMP207, COMP208, COMP283, COMP284, COMP390	CS
ECON121	Principles of Microeconomics (•)	15	4	-	-	ECON241	ULMS
Semester 2							
ACFI102	Introduction to Management Accounting (•)	15	4	-	-	-	ULMS
ACFI103	Introduction to Finance (•)	15	4	-	-	ACFI213 ECON241	ULMS
COMP106	Human-Centric Computing (•)	15	4	-	COMP101	-	CS
COMP122	Object-Oriented Programming (•)	15	4	-	COMP101 or COMP105	COMP201, COMP207, COMP220, COMP211, COMP212, COMP222, COMP281, COMP284, COMP285, COMP208, COMP327, COMP390	CS

*May also be a pre-requisite for modules on other programmes

YEAR 2

Module Code	Module Title	Credit Value	Level	Co-requisite	Pre-requisites	Pre-requisite for	Parent Dept
Semester 1							
ACFI201	Financial Reporting I (•)	15	5	-	ACFI101	ACFI202 ACFI302 ACFI309	ULMS
ACFI213	Corporate Financial Management for non-specialist students (•)	15	5	-	ACFI102 ACFI103	ACFI314 ACFI341	ULMS
COMP201	Software Engineering I (•)	15	5	-	COMP122, COMP107	COMP215	CS
COMP207	Database Development (•)	15	5	-	COMP122, COMP107	None	CS
Semester 2							
COMP215	eCommerce Group Project (•)	15	5	-	-	COMP396	CS
COMP226	Computer-Based Trading in Financial Markets (•)	15	5	-	-	COMP396	CS
ECON241	Securities Markets (•)	15	5	-	ACFI103 ECON121	-	ULMS
Plus options totalling 15 credits from the following five modules provided pre-requisites are satisfied:							
ACFI202	Accounting Theory	15	5	-	ACFI201	-	ULMS
COMP283	Applied Database Management	7.5	5	-	COMP107 COMP207	None	CS
COMP284	Scripting Languages	7.5	5	-	COMP122 COMP107	None	CS
COMP285	Computer Aided Software Development	7.5	5	-	COMP122 COMP201	None	CS
MKIB225	International Business	15	5	-	-	MKIB351	ULMS

*May also be a pre-requisite for modules on other programmes

YEAR 3							
Module Code	**Module Title**	**Credit Value**	**Level**	**Sem-ester**	**Pre-requisites**	**Pre-requisite for**	**Parent Dept**

COMP299	Industrial Placement Year 3	120	5	1+2	COMP110 COMP102, COMP104, COMP110 or equivalents; COMP122 and COMP108 recommended	-	CS

YEAR 4							
Module Code	**Module Title**	**Credit Value**	**Level**	**Co-requisite**	**Pre-requisites**	**Pre-requisite for**	**Parent Dept**
Semester 1 and 2							
COMP396	Honours Year Automated Trading Project (+)	30	6	-	COMP226 Yr 2 of N300	-	CS
Semester 1							
ACFI314	Quantitative Business Finance (•)	15	6	-	ACFI213	ACFI341	ULMS
COMP323	Introduction to Computational Game Theory (•)	15	6		COMP109 or COMP116 Or equivalent mathe-matical module	COMP326	CS
Plus options totalling 15 credits from the following five modules provided pre-requisites are satisfied:							
ACFI309	Financial Reporting 2	15	6	-	ACFI101 ACFI201	ACFI302	ULMS
COMP319	Software Engineering II	15	6	-	COMP201	-	CS
COMP331	Optimization	15	6	-	COMP109 or COMP116 Or equivalent mathe-matical module	-	CS
EBUS301	E-Business Models and Strategy	15	6	-	-	-	ULMS
MKIB351	Global Strategic Management	15	6	-	MKIB225	-	ULMS
Semester 2							
ACFI341	Finance and Markets (•)	15	6	-	ACFI314	-	ULMS
COMP315	Technologies for E-Commerce (•)	15	6	-	COMP207	-	CS
Plus options totalling 15 credits from the following three modules provided pre-requisites are satisfied							

ACFI302	Corporate Reporting and Analysis	15	6	-	ACFI101 ACFI201 ACFI309	-	ULMS
COMP310	Multi-Agent Systems	15	6	-	-	-	CS
COMP326	Computational Game Theory and Mechanism Design	15	6	-	COMP323 COMP109 Or COMP116 or equivalent mathe-matical module	-	CS

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

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.

More details on sourcing placements and on the year in industry assessment can be found in the following documents:

https://www.liverpool.ac.uk/computer-science/industry-partners/host-a-student/

http://cgi.csc.liv.ac.uk/~valli/Introduction-YINI.html

http://cgi.csc.liv.ac.uk/~valli/Placement-Assessment.html

35. Liaison between the Level 2 Schools/Institutes involved:

The programme will be overseen by a management group consisting initially of Dr Giorgos Christodoulou (Director of Studies), Dr Rahul Savani (CS), Mr Jason Laws (ULMS) and Prof Gary Cook (ULMS).

ULMS to have representation on the Board of Studies in Computer Science via invitation to the head of ULMS to send a representative. Any relevant issues raised during the Departmental Board of Examiner and SSLC meetings will also be communicated to the BoS representative.

Part E: Learning, Teaching And Assessment Strategies

36. Learning, Teaching and Assessment Strategies:

The programme complies with:

a. University of Liverpool's Education Strategy 2026 and Strategic Action Plan (https://www.liverpool.ac.uk/aqsd/learning-and-teaching/education-strategy/)
b. University of Liverpool Code of Practice on Assessment (all at https://www.liverpool.ac.uk/aqsd/academic-codes-of-practice/code-of-practice-on-assessment/)
Department of Computer Science Learning and Teaching Strategy: http://www.csc.liv.ac.uk/department/ltas/LTAS.html

The Department has made use of techniques associated with e-learning for many years. In this programme (as in all others), lecture material, additional reading material, assignments, model solutions and feedback are all made available online. In addition, some modules have experimented with online provision of video-recorded lectures, electronic discussion forums and teaching software. Continually assessed work is often submitted electronically, allowing plagiarism detection to be performed automatically, and reports on such work may be returned in a similar fashion.

The final year option in Global Strategic Management has a 40% weighted coursework element based on a computer simulation where students compete against each other in teams running an international company

36a. Learning, Teaching and Assessment methods:

The programme is delivered through a mixture of formal lectures, practical and tutorial sessions, guided reading, student centred learning, and project 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. Practical assessment is employed for both formative assessment and summative assessment. In more detail, 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.

At Level 4, all modules provide a degree of formative assessment via tutorial and lab sessions as well as in-class tests and problem solving exercises. For all Levels, most summative assessment is individual work, with team-based work comprising a key component of assessment at Level 5. Formative feedback is given on completion of student coursework. The second year group project and the Honours year project include elements of assessment by oral, poster and demonstration representation of project work. The mark produced for a module is subject to scrutiny by the Computer Science Undergraduate Boards of Examiners including the External Examiner for this programme. Decisions on progress are also controlled by the university's published regulations.

The Department currently does not conduct any "viva voce" examinations.

Details of the assessment method for each module can be obtained from the Department of Computer Science Student Handbook. For information on adjustments to examination arrangements for disabled students see Appendix K of the University Code of Practice on Assessment.

37. Assessment information for students:

Code of Practice on Assessment

The University has a Code of Practice on Assessment which brings together the main institutional policies and rules on assessment. The Code is an authoritative statement of the philosophy and principles underlying all assessment activities and of the University's expectations in relation to how academic subjects design, implement and review assessment strategies for all taught programmes of study.

The Code of Practice includes a number of Appendices which provide more detail on the regulations and rules that govern assessment activity; these include:

- The University marks scale, marking descriptors and qualification descriptors;
- The model for non-clinical first degree programmes;
- The system for classifying three-year, non-clinical, undergraduate degrees;
- The system for classifying four-year, non-clinical, undergraduate degrees that include a year in industry or a year abroad;
- Information about students' progress, including guidance for students;
- The procedure for assessment appeals;
- Regulations for the conduct of exams;
- The University's policy on making adjustments to exam arrangements for disabled students.
- The code of practice relating to external examining (see also below)
- The Academic Integrity Policy, which covers matters such as plagiarism and collusion and includes guidance for students;
- The policy relating to mitigating circumstances which explains what you should do if you have mitigating circumstances that have affected assessment; and
- The policy on providing students with feedback on assessment.

Please click here to access the Code of Practice on Assessment and its appendices; this link will also give you access to assessment information that is specific to your cohort:

A summary of key assessment information is also available in the 'Your University' handbook.

Marking criteria:
Marking on level 4, 5 and 6 modules offered by the Department of Computer Science is carried out using the following marking descriptors:

	For practical exercises and projects	**For exercises, presentations, projects, and written examinations:**
90-100% **Exceptional performance**	Displays an *exceptional* degree of originality and creativity and/or *exceptional* analytical	Shows *critical* understanding of current knowledge. For level 6 this should include relevant recent research

	and problem solving skills. Solution must have novel aspects. The methodology employed is well-developed and correct.	papers. Perceptive, focused treatment of all issues/questions presented in a critical and scholarly way.
80-89% **Outstanding**	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.	Evidence of wide reading. For level 6 this should include relevant research papers and books. Perceptive, focused treatment of all issues/questions presented in a critical and scholarly way.
70-79% **Excellent**	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.	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% **Very good**	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.	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% **Good**	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.	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% **Satisfactory**	Demonstrates an ability to solve limited, well-defined problems of a familiar type. Most aspects of a suitable	General knowledge and understanding of the subject but very limited in depth or breadth. Arguments/answers are likely to be somewhat

	methodology evident, but minor flaws in its use or omissions with some negative impact on the result of the work. Satisfactory understanding and meeting all learning outcomes.	lacking in structure. There are likely to be errors and omissions and the evidence provided to support arguments will be very limited. Satisfactory understanding and meeting all learning outcomes.
35-39% **Compensatable Fail**	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. Minimally sufficient understanding of all learning outcomes.	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. Minimally sufficient understanding of all learning outcomes.
30-34% **Fail**	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. Understanding of at least one associated learning outcome insufficient.	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. Understanding of at least one associated learning outcome insufficient.
20-29% **Fail**	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. Minimal grasp of task-related learning outcome(s) and a resulting failure to demonstrate understanding.	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. Minimal grasp of task-related learning outcome(s) and a resulting failure to demonstrate understanding.

10-19% **Fail**	Little evidence of the use of a suitable methodology. Demonstrable and significant gaps in achieving task aims and the associated learning outcome(s)	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. Demonstrable and significant gaps in achieving task aims and the associated learning outcome(s)
0-9% **Fail**	No evidence of the use of a suitable methodology. Little or no understanding of task aims; clear failure to adequately demonstrate attainment of any associated learning outcome.	Virtually devoid of any evidence of knowledge or understanding of the subject. No or almost no arguments/answers. Little or no understanding of task aims; clear failure to adequately demonstrate attainment of any associated learning outcome.

Marking on level 4, 5, and 6 modules offered by the University of Liverpool Management School is carried out using the following marking descriptors

1. ASSIGNMENTS

90 – 100%	Thorough and authoritative execution of the brief. Containing evidence of significant independent research, reflective, perceptive, well-structured, showing significant originality in ideas or argument, aptly focussed and very well written, few areas for improvement.
80-89%	Thorough execution of the brief, well-structured, clearly argued, signs of originality and/or independent critical analytical ability. Supported by independent research, materials well utilized; well focussed and well written.
70-79%	Good execution of the brief; well-focussed, knowledgeable, strong evidence of reading beyond the basic texts and displays mastery of the subject matter.
60%-69%	Well-structured and well-focussed answer with strong evidence of reading beyond the basic texts. Thorough and comprehensive in approach. Displays a good knowledge of the subject matter and an ability to discuss theories and concepts.
50-59%	Competently structured answer, reasonably well-focussed and comprehensive but tending to be descriptive in

	approach. Limited evidence of reading beyond the basic texts.
40%-49%	Relies largely upon lecture materials and basic texts. Descriptive in approach, limited knowledge and understanding of the subject matter displayed; partial and/or containing significant errors and/or irrelevancies; poorly structured.
30%-39%	Inadequate execution of the brief. Highly partial and/or containing serious errors; contents partly or substantially irrelevant. Poorly structured. Displays little knowledge of the subject matter.
0% - 29%	Seriously inadequate execution of the brief. Failure to focus upon the question. Seriously short or even devoid of theoretical under-pinning. Large sections irrelevant. Evidence of potential plagiarism.

2. EXAMINATIONS

90 – 100%	Comprehensive and authoritative answer. Containing evidence of significant independent research. Reflective, perceptive, well-structured. Showing significant originality in ideas or argument. Aptly focussed and well-written. Few areas for improvement.
80-89%	Well-focussed, carefully structured and thorough answer. Cogent and clearly argued, showing signs or originality and/or independent critical analytical ability. Supported by independent research. Displays mastery of the subject matter to an exceptional degree.
70-79%	Well-focussed answer, cogent, comprehensive, strong evidence of reading beyond the basic texts, displays mastery of the subject matter and ability to discuss theories and concepts in an intelligent and penetrating manner.
60%-69%	Comprehensive and coherent answer, suitably focussed. Evidence of significant reading beyond the basic texts. Displays a good knowledge of the subject matter and an ability to discuss theories and concepts intelligently and analytically.
50-59%	Competently structured answer. Reasonably well-focussed and comprehensive but tending to be descriptive in approach. Limited evidence of reading beyond the basic texts.
40%-49%	Relies largely upon lecture materials and basic texts. Descriptive in approach, displays limited knowledge and understanding of the subject matter. Partial and/or containing significant errors and/or irrelevancies. Poorly structured.
30%-39%	Inadequate reference to relevant concepts and theories. Highly partial and/or containing serious errors. Contents partly or substantially irrelevant. Poorly structured. Displays little knowledge or understanding of the subject matter.
0% - 29%	Seriously inadequate reference to relevant concepts and theories. Near complete or complete failure to focus upon the question. Highly partial and/or containing many serious errors. Large sections irrelevant. Question not answered or

	questions not attempted.

3. DISSERTATIONS: Not applicable

4. GROUP OR INDIVIDUAL PRESENTATIONS

90 – 100%	Engaging presentation involving good use of visual aids, clear introduction, delivery and summary. Materials well organised. Time limits observed. Questions responded to with courtesy and authority. Contents well-focussed upon the brief. Evidence of research beyond basic texts and lecture materials and the ability to use materials in a creative and original manner. Little scope for improvement.
80-89%	Engaging presentation involving good use of visual aids, clear introduction, delivery and summary. Materials well organised. Time limits observed. Questions responded to with courtesy and authority. Contents well-focussed upon the brief. Evidence of research beyond basic texts and lecture materials and the ability to use materials in a creative and original manner. Scope for minor improvement on one or more points.
70-79%	Generally engaging presentation involving good use of visual aids, clear introduction, delivery and summary. Materials well organised. Time limits observed. Questions responded to with courtesy and authority. Contents generally appropriate and well-focussed upon the brief. Evidence of research beyond basic texts and lecture materials.
60%-69%	Generally satisfactory presentations involving clear introduction, delivery and summary and possibly supported by visual aids. Good focus upon the brief. Materials well-organised, time limits observed, questions responded to with courtesy. Contents generally appropriate, satisfactory focus upon the brief. Evidence of research beyond basic texts and lecture materials.
50-59%	Generally satisfactory presentation but slippage on one or more of the following points: introduction; delivery of main presentation and summary; appropriateness of visual aids; general organisation of presentation including observance of time limits and dealing with questions. Presentation based mainly on basic texts and lecture materials.
40%-49%	Barely satisfactory presentation involving weaknesses on one or more of the following points: introduction; delivery of main presentation and summary; appropriateness of visual aids; general organisation of presentation including observance of time limits and dealing with questions. Presentation based mainly on basic texts and lecture materials. May be partial and contain errors.
30%-39%	Unsatisfactory presentation involving weaknesses on one or more of the following points: delivery of main presentation and summary; use and appropriateness of visual aids; general organisation of presentation including observance of time limits an dealing with questions. Presentation based mainly on basic texts and lecture materials. May be partial and contain errors.

0% - 29%	Highly unsatisfactory presentation possibly involving complete failure to focus upon the brief. Alternatively, may involve serious and multiple weaknesses as regards introduction, delivery of main presentation and summary, use and appropriateness of visual aids and general organisation of presentation including observance of time limits and dealing with questions. Presentation based mainly upon lecture materials. May be partial and contain errors.

5. UNDERGRADUATE PORTFOLIOS, LEARNING LOGS AND JOURNALS

90 – 100%	Comprehensive and highly detailed records. Carefully structured, extensive evidence of critical and creative reflection upon almost every aspect of course content. Hard to identify gaps or suggestions for improvement. Excellent standard of presentation.
80 – 89%	Comprehensive and detailed, systematically structured, significant evidence of critical and creative reflection upon course content. Few gaps or suggestions for improvement. Excellent standard of presentation.
70 – 79%	Comprehensive and detailed, systematically structured, significant evidence of creative and critical reflection upon course content. Few gaps or suggestions for improvement. Excellent standard of presentation. Possibly some weaknesses but compensated for by a high level of achievement upon other criteria.
60 – 69%	Comprehensive and detailed, systematically structured. Evidence of sustained reflection upon course content. Excellent standard of presentation.
50 – 59%	Systematically structured and reasonably comprehensive and detailed though there may be evidence of work missing or otherwise not sustained. Good standard of presentation but tending to be descriptive/anecdotal rather than reflective.
40 – 49%	Adequately structured and reasonably comprehensive but lacking in detail. Adequate standard of presentation but predominantly descriptive/anecdotal rather than reflective.
30 – 39%	Structuring barely adequate. Contents partial and level of detail patchy. Presentation barely adequate may contain irrelevant material. Little attempt made to engage in reflection.
20 – 29%	A very 'thin' presentation, that is., inclusion of inadequate material, virtually no attempt made whatsoever to reflect upon materials. Presentation inadequate, for example, lacking proper diary, little use made of sign-posting or other aids to reading.
0 – 19%	A very 'thin' presentation, that is, inclusion of materials seriously inadequate, virtually no attempt made whatsoever to reflect upon materials and in any case, hardly any materials to reflect upon. Presentation inadequate, for example, lacking proper diary, little use made of sign-posting or other aids to reading. May contain irrelevant material.

38. Student representation and feedback:

Student representation and feedback are facilitated through:

1. The University Academic Advisor scheme.
2. The Department's Undergraduate 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.

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

Part F: Status Of Professional, Statutory Or Regulatory Body Accreditation

39. Status of Professional, Statutory or Regulatory Body Accreditation:

With an equal proportion of Computing and Finance/Accounting related content, the programme does not currently qualify for accreditation by a professional body such as BCS, the Chartered Institute for IT.

Part G: 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

Annex of Modifications Made to the Programme

Please complete the table below to record modifications made to the programme.

Description of modification (please include details of any student consultation undertaken or confirm that students' consent was obtained where this was required)	**Minor or major modifications**	**Date approved by FAQSC**	**Date approved by AQSC (if applicable)**	**Cohort affected**
2017/18: 1. COMP102, COMP109 and COMP106 will be discontinued. Practical aspects of				

COMP102 will be taught as part of COMP107, theoretical content will be deferred to Year 2. Practical aspects of COMP106 will be covered by in COMP122. Employability and professional skills will be taught as part of COMP107. 2. COMP101 becomes Introduction to Programming. The module will be aimed at introducing main programming and software engineering concepts to students without prior programming experience. This module will not be available to students with an A-level in Computer Science and students might be allowed to opt out and take COMP105 instead if they show evidence of programming experience. 3. COMP122 Object-oriented programming will be compulsory for all students and cover advanced Java programming. 4. COMP109 is replaced by COMP116 which runs in the second semester and provides more targeted mathematical material needed in the third year.				