

Programme Specification

1	Awarding body	University of London				
2	Teaching Institution	Birkbeck College				
3	Programme Title(s)	MRes Computer Science				
4	Programme Code(s)	TMRCOSCI_C				
5	UCAS code	N/A				
6	Home Department	Computer Science and Information Systems				
7	Exit Award(s)	PG Cert				
8	Duration of Study (number of years)	One year full-time, two years part-time				
9	Mode of Study	FT	X	PT	X	DL
10	Level of Award (FHEQ)	7				
11	Other teaching depts or institution	N/A				
12	Professional, Statutory Regulatory Body(PSRB) details	N/A				
13	<u>QAA Benchmark Statement</u>	N/A				

14	Programme Rationale & Aims
	<p>The programme has been designed to meet the needs of both students wishing to advance their knowledge of computing or information systems before embarking on a Research and Development career in IT, or on an MPhil/PhD degree, and students already working in the IT sector.</p> <p>The programme builds on students' advanced understanding of computing and information systems (as required by the entry criteria to the programme) by offering a supervised research project in one of the following areas of advanced study:</p> <ol style="list-style-type: none"> 1) Algorithms, Verification and Software, 2) Experimental Data Science, 3) Knowledge Representation and Data Management, <p>In addition, students follow three taught modules in the above areas, and a module on Research Methods.</p> <p>Students who complete the programme successfully will have gained an in-depth theoretical and practical knowledge in their chosen area of study, which they will be able to use in:</p> <ul style="list-style-type: none"> • analysis of problems, • evaluation of technology options, • deployment of appropriate solutions, and • research into, and development of, new technologies. <p>The above three areas of study have a strong correspondence with the research expertise of the Department of Computer Science and Information Systems, which has a unique research profile within the University of London. Students will have the opportunity to undertake their research within ongoing research projects in the Department.</p>

15	Entry Criteria
	<p>The normal entrance requirements are a good first degree or MSc in computing, with the syllabus covering a substantial amount of programming, preferably in an object-oriented language. It is also expected that students will usually have completed at least introductory courses on computer networks and databases. Joint-honours computing graduates may also be eligible for entry provided they have covered the necessary prerequisite material. Candidates who have less than the required academic qualifications may be considered for entry if they have significant professional experience in the IT industry.</p>
16	Learning Outcomes
	<p>1. Subject Specific</p> <p>An advanced level of the following:</p> <ul style="list-style-type: none"> a) knowledge In algorithms, complexity, verification and software knowledge in areas such as <ul style="list-style-type: none"> i) algorithms and complexity <ul style="list-style-type: none"> (1) circuit complexity (2) machine learning algorithms based on neural networks (3) parameterised algorithms (4) probabilistic algorithms (5) performance guarantees for heuristic algorithms ii) verification <ul style="list-style-type: none"> (1) automated software termination and runtime bounds analysis (2) probabilistic model checking (3) satisfiability problems for various logics (4) term rewriting iii) software <ul style="list-style-type: none"> (1) programming languages (2) compilers (3) software engineering <p>OR</p> <ul style="list-style-type: none"> b) knowledge in Experimental Data Science in areas such as <ul style="list-style-type: none"> i) Web social human dynamics Applied machine learning for Big Data ii) Visual and geometric computing iii) Management, integration and mining of life sciences data iv) Mobile computing and the Internet of Things v) Applications in the digital economy, healthcare technologies and technology-enhanced learning <p>OR</p> <ul style="list-style-type: none"> c) Knowledge Representation and Data Management Research Group

	<ul style="list-style-type: none"> i) data integration ii) data management iii) knowledge representation and reasoning iv) logic v) ontology-based data access vi) query languages and query optimisation vii) semantic web technologies <p>2. Intellectual</p> <ul style="list-style-type: none"> • critical analysis of problems in IT • identification of appropriate technical solutions • ability to evaluate technologies in context • reading and evaluation of research publications • identification of new research directions <p>3. Practical</p> <p>use of modern database, data warehousing, data mining and world wide web technologies</p> <p style="text-align: center;">OR</p> <p>use of logic, deep networks: architectures and learning algorithms, genetic algorithms, swarm intelligence, evolutionary computing, clustering, data visualisation and computer vision techniques</p> <p style="text-align: center;">OR</p> <p>use of object-oriented information systems analysis and design techniques, modern software development techniques, scalable applications and parallel and concurrent processing software</p> <p>4. Personal and Social</p> <ul style="list-style-type: none"> • self-learning • planning of work and working to deadlines • preparing and delivering seminars • planning, implementation and reporting of a substantial research project
17	Learning, teaching and assessment methods <p>The principal teaching methods include formal lectures, tutorials and practical lab sessions. There are also seminars and group exercises carried out in class in some of the modules. There is a large element of practical coursework which students complete in their own time. Some of these coursework assignments are carried out in groups. The research project provides an opportunity for students to research more deeply into an aspect of the curriculum that particularly interests them. This research is undertaken with the guidance and supervision of two members of staff. Broader research issues are presented in research seminars run by the School, while research methodologies are covered in the Research Methods module.</p>

	<p>The assessment methods ensure that the learning outcomes of the programme are addressed, while taking into account the needs and background of the student body as well as the resources available.</p> <p>There is an appropriate balance between research project, coursework and examinations, allowing examiners to discriminate between different levels of achievement. On-going formative feedback is provided to students by means of feedback on an interim project report and a suitable range of coursework assignments.</p> <p>The Research Project is judged on project report of about 20,000 words (maximum 30,000 words) plus related technical submissions, and the project presentation. The presentation contributes 10% to the project mark, and the report 90%. The project report must contain</p> <ol style="list-style-type: none"> a critical survey of the research literature in the area of research undertaken by the student, plus an account of the student's own work during the project. This may consist of new theoretical research results, or an implementation and critical evaluation of an existing research approach, or a combination of these. <p>The research project allows students to demonstrate self-direction and originality in pursuing an area of current research with a significant element of critical evaluation as well as the ability to apply and develop the knowledge gained. The report and project presentation ensure students can communicate their conclusions clearly in writing and verbally.</p> <p>The Research Methods module is assessed by an interim project report of maximum 10,000 words plus related technical submissions, and an interim project presentation. The presentation contributes 20% to the mark, and the report 80%. The interim project report must contain</p> <ol style="list-style-type: none"> a critical survey of the research literature in the area of research so far undertaken by the student, plus a report of the student's own work so far during the project, plus a work plan for work still to be done. <p>Each taught module is assessed by a 2-hour written exam. In addition, some modules have a coursework component, which, for some, must be passed in order to pass the module.</p>
18	Programme Description
	<p>Students undertake a supervised individual Research Project, taken over 12 months by full-time students and 24 months by part-time students. In addition, a compulsory Research Methods module is taken in the first year. Students select a further three taught modules from the following list, appropriate to their chosen research area: such selections are subject to approval by the Programme Director. Not all modules on the programme will necessarily be offered in each year.</p>

19	Programme Structure			
Full Time programme				
Year 1				
Level	Module Code	Module Title	Credits	Status*
7	COIY055H7	Research Methods	15	Core
7	COIY031Q7	MRes Computer Science Research Project	120	Core
7		3 x 15 credit options	45	Optional
Indicative list of options				
7	COIY025H7	Advances in Data Management	15	Optional
7	BUCI077H7	Applied Machine Learning	15	Optional
7	BUCI042H7	Data Analytics Using R	15	Optional
7	BUCI029H7	Cloud Computing	15	Optional
7	COIY029H7	Component Based Software Development	15	Optional
7	BUCI057H7	Data Science Techniques and Applications	15	Optional
7	BUCI004H7	Information and Network Security	15	Optional
7	BUCI059H7	Interactive Systems	15	Optional
7	COIY063H7	Internet and Web Technologies	15	Optional
7	COIY065H7	Machine Learning	15	Optional
7	COIY047H7	Mobile Computing and the Internet of Things	15	Optional
7	COIY064H7	Natural Language Processing and Information Retrieval	15	Optional
7	BUCI031H7	Programming Paradigms and Languages	15	Optional
7	COIY053H7	Semantic Technologies	15	Optional
Part Time programme				
Year 1				
Level	Module Code	Module Title	Credits	Status*
7	COIY055H7	Research Methods	15	Core
7		3 x 15 credit options	45	Optional
Year 2				
Level	Module Code	Module Title	Credits	Status*
7	COIY031Q7	MRes Computer Science Research Project	120	Core
Indicative list of options				
7	COIY025H7	Advances in Data Management	15	Optional
7	BUCI077H7	Applied Machine Learning	15	Optional
7	BUCI042H7	Data Analytics Using R	15	Optional
7	BUCI029H7	Cloud Computing	15	Optional
7	COIY029H7	Component Based Software Development	15	Optional
7	BUCI057H7	Data Science Techniques and Applications	15	Optional
7	BUCI004H7	Information and Network Security	15	Optional
7	BUCI059H7	Interactive Systems	15	Optional
7	COIY063H7	Internet and Web Technologies	15	Optional
7	COIY065H7	Machine Learning	15	Optional
7	COIY047H7	Mobile Computing and the Internet of Things	15	Optional

7	COIY064H7	Natural Language Processing and Information Retrieval	15	Optional
7	BUCI031H7	Programming Paradigms and Languages	15	Optional
7	COIY053H7	Semantic Technologies	15	Optional

Status*

CORE – Module must be taken and passed by student

COMPULSORY – Module must be taken, mark can be reviewed at sub-exam board

OPTIONAL – Student can choose to take this module

20	Regulations
	<ul style="list-style-type: none"> Admissions This programme adheres to the College Admissions Policy http://www.bbk.ac.uk/registry/policies/documents/admissions-policy.pdf Credit Transfer Accredited Prior Learning will be considered in line with the College Policy on Accredited Prior Learning http://www.bbk.ac.uk/registry/policies/documents/accreditation-prior-learning.pdf Programme Regulations This programme adheres to the College Common Awards Scheme http://www.bbk.ac.uk/registry/policies/regulations Programme Specific Regulations (or not applicable) N/A

21	Student Attendance Framework – in brief
	<p>The full version of the 'Student Attendance Framework' is available http://www.bbk.ac.uk/mybirkbeck/services/rules/Attendance-Framework.pdf .</p> <p>Principle Consistent and regular student attendance in class (or equivalent) promotes and affords student success. Inconsistent and irregular attendance is less likely to result in student success and is consistent with lower marks and degree classifications being achieved and awarded.</p> <p>Attendance expectation Birkbeck, University of London expects you to consistently attend all timetabled sessions, including lectures, seminars, group and individual tutorials, learning support sessions, workshops, laboratories, field trips, inductions and demonstrations.</p> <p>E-Registers All Birkbeck students are issued with student cards. Students are expected to take them to classes and to assessment venues and to present them to a member of staff if requested. This is for the purpose of identifying Birkbeck students.</p>

22	Student Support and Guidance
	All Birkbeck students have access to a range of student support services, details can be found on our website here: http://www.bbk.ac.uk/student-services

23	Methods of Enhancing Quality and Standards
	<p>The College has rigorous procedures in place for the monitoring and enhancing its educational provision. This includes regular monitoring of programmes drawing on feedback from various sources including external examiner's reports, student feedback, student achievement and progression data. In addition, departments are reviewed every four to five years through the internal review process that includes external input.</p> <p>For more information please see the Academic Standards and Quality website http://www.bbk.ac.uk/registry/about-us/operations-and-quality .</p>

24	Programme Director	Dr Oded Lachish
25	Start Date (<i>term/year</i>)	Autumn 2003
26	Date approved by Education Committee	Summer 2003
27	Date approved by Academic Board	Summer 2003
28	Date(s) updated/amended	February 2020