Programme Specification

1	**Awarding body**	University of London
2	**Teaching Institution**	**Birkbeck College**
3	**Programme Title(s)**	**MSc Advanced Computing Technologies**
4	**Programme Code(s)**	TMSACTEC_C
5	**UCAS code**	N/A
6	**Home Department**	Computer Science and Information Systems
7	**Exit Award(s)**	MSc Advanced Computing Technologies MSc Data Analytics MSc Information and Web Technologies MSc Learning Technologies PGDip Advanced Computing Technologies PGCert Advanced Computing Technologies
8	**Duration of Study** (number of years)	1year full-time, 2-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	**QAA Benchmark Statement**	N/A

14	**Programme Rationale & Aims**

This specialist programme of study of advanced computing technologies has been designed to meet the needs of both part-time and full-time students wishing to advance their knowledge of advanced computing technologies. Students may be already working in the IT sector and wish to update their skills, or intend to pursue a career in IT or a research degree subsequently. The programme has significant coverage of emerging technologies and research developments, and focuses on areas of expertise and research specialisation within the Department of Computer Science and Information Systems.

In addition to eight taught modules, there is a substantial practical project. As an alternative to the award of MSc Advanced Computing Technologies (ACT), students may choose modules and a project with a particular specialisation leading to awards MSc Data Analytics (DAA), MSc Information and Web Technologies (IWT) or MSc Learning Technologies (LT).

Students who complete this MSc will have obtained knowledge and understanding of technologies of growing importance in the IT industry and their relationship to current and emerging IT industry practice. They will be able to use this knowledge and technical skills gained in:

- analysis of problems arising in the use of advanced computing technologies
- evaluation of technology options
- deployment of appropriate solutions
- research into, and development of, new technologies.

15	**Entry Criteria**
	The normal entrance requirements are a good first degree or MSc in Computer Science, with the syllabus covering a substantial amount of programming, preferably in an object-oriented language. Joint honours computing graduates may also be eligible, provided they have covered a substantial amount of programming, or have equivalent professional experience in the IT industry.

16	**Learning Outcomes**
	1. Subject Specific An advanced level of the following: a) knowledge of advanced computing technologies (ACT pathway) OR data analytics (DAA pathway) OR information and web technologies (IWT pathway) OR learning technologies (LT pathway) **2. Intellectual** a) critical analysis of the problems relating to the application of advanced computing technologies in computer systems development b) identification of appropriate technical solutions c) ability to evaluate advanced computing technologies in context d) evaluation of research publications **3. Practical** a) use of advanced computing technologies (ACT pathway) OR data analytics (DAA pathway) OR information and web technologies (IWT pathway) OR learning technologies (LT pathway) b) plan, execute and report on project work in the area of advanced computing technologies (ACT pathway) OR data analytics (DAA pathway) OR information and web technologies (IWT pathway) OR learning technologies (IWT pathway) **4. Personal and Social** a) work and learn independently b) work and learn collaboratively c) plan work and work to deadlines

17	**Learning, teaching and assessment methods**
	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 the students carry out in their own time. Some of these coursework assignments are carried out in groups. The individual project provides an opportunity for students to go more deeply into an aspect of the curriculum that particularly interests them and to build a larger and more complex system than they encounter in the assignments. 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.

There is an appropriate balance between coursework, examinations and projects, allowing examiners to discriminate between different levels of achievement. On-going formative feedback is provided to students by means of a suitable range of coursework assignments.

Taught modules: there will be a 2-hour written exam in each of the modules. In addition, there will be a compulsory coursework component to some of the modules, which must be passed in order to pass the module.

Project: judged on project report of about 10,000 words (maximum 15,000 words) plus related technical submissions.

The project allows students to demonstrate self-direction and originality in solving and tackling problems, to plan and implement tasks to a professional level, and to continue to advance their knowledge, understanding and skills.

| 18 | **Programme Description** |

Students on the MSc Advanced Computing Technologies (ACT) programme follow 8 modules from the following list and also complete a project in one or more of the areas covered by these modules.

- Advances in Data Management (ADM)
- Big Data Analytics Using R (BDA)
- Cloud Computing (CC)
- Component-Based Software Development (CBSD)
- Data Science Techniques and Applications (DSTA)
- Data Warehousing and Data Mining (DWDM)
- Information and Network Security (INS)
- Information Retrieval and Organisation (IRO)
- Intelligent Technologies (IT)
- Interactive Systems (IRS)
- Internet and Web Technologies (IWT)
- Mobile Computing and the Internet of Things (MCIT)
- Programming Paradigms and Languages (PPL)
- Search Engines and Web Navigation (SEWN)
- Semantic Web (SW)
- Software Design and Programming (SDP)

The modules largely reflect the areas of expertise and research specialisation within the department as follows. Some modules appear within more than one group reflecting the cross-group research synergies within the department.

Data Analytics Group:
- Advances in Data Management (ADM)
- Big Data Analytics Using R (BDA)
- Cloud Computing (CC)
- Data Science Techniques and Applications (DSTA)
- Data Warehousing and Data Mining (DWDM)
- Information Retrieval and Organisation (IRO)
- Intelligent Technologies (IT)
- Search Engines and Web Navigation (SEWN)

Information and Web Technologies Group:
- Advances in Data Management (ADM)
- Component-Based Software Development (CBSD)
- Data Warehousing and Data Mining (DWDM)
- Information Retrieval and Organisation (IRO)
- Internet and Web Technologies (IWT)
- Mobile Computing and the Internet of Things (MCIT)
- Search Engines and Web Navigation (SEWN)
- Semantic Web (SW)

For students whose interests are centred on one of these specialised areas, named pathways are offered to those satisfying the following criteria in their choice of 8 modules from the overall list offered:
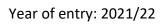
MSc Data Analytics (DAA): A minimum of 5 modules chosen from the Data Analytics Group above.

MSc Information and Web Technologies (IWT): A minimum of 5 modules chosen from the Information and Web Technologies Group above.

The project of an MSc DAA or IWT student should be in the corresponding area of Data Analytics or Information and Web Technologies, respectively.
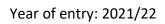
MSc Learning Technologies: Any 8 modules plus the Project in Learning Technologies.

19	**Programme Structure**

MSc Advanced Computing Technologies - Full Time programme – 1 year

Year 1

Level	Module Code	Module Title	Credits	Status*
7		8 x 15-credit optional modules from Advanced Computing Technologies list below	120	Optional
7	BUCI035D7	MSc Advanced Computing Technologies Project	60	Core

MSc Advanced Computing Technologies - Part Time programme – 2 years

Year 1

Level	Module Code	Module Title	Credits	Status*
7		4 x 15-credit optional modules from Advanced Computing Technologies list below	60	Optional

Year 2

Level	Module Code	Module Title	Credits	Status*
7		4 x 15-credit optional modules from Advanced Computing Technologies list below	60	Optional
7	BUCI035D7	MSc Advanced Computing Technologies Project	60	Core

MSc Advanced Computing Technologies Optional Modules

Level	Module Code	Module Title	Credits	Status*
7	COIY025H7	Advances in Data Management	15	Optional
7	BUCI042H7	Big 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	COIY026H7	Data Warehousing and Data Mining	15	Optional
7	BUCI004H7	Information and Network Security	15	Optional
7	COIY064H7	Information Retrieval and Organisation	15	Optional
7	COIY065H7	Intelligent Technologies	15	Optional
7	BUCI059H7	Interactive Systems	15	Optional
7	COIY063H7	Internet and Web Technologies	15	Optional
7	COIY047H7	Mobile Computing and the Internet of Things	15	Optional
7	BUCI031H7	Programming Paradigms and Languages	15	Optional
7	COIY023H7	Search Engines and Web Navigation	15	Optional
7	COIY053H7	Semantic Web	15	Optional
7	COIY062H7	Software Design and Programming	15	Optional

Pathway: MSc Data Analytics - Full Time programme – 1 year

Year 1

Level	Module Code	Module Title	Credits	Status*
7		5 x 15-credit optional modules from the Data Analytics list below	75	Optional
7		3 x 15-credit optional modules from the Advanced Computing Technologies list above	45	
7	BUCI035D7	MSc Advanced Computing Technologies Project	60	Core

Pathway: MSc Data Analytics - Part Time programme – 2 years

Year 1

Level	Module Code	Module Title	Credits	Status*
7		5 x 15-credit optional modules from the Data Analytics list below – <u>over 2 years</u>	75	Optional
7		3 x 15-credit optional modules from the Advanced Computing Technologies list above – <u>over 2 years</u>	45	Optional

Year 2

Level	Module Code	Module Title	Credits	Status*
7		5 x 15-credit optional modules from the Data Analytics list below – <u>over 2 years</u>	75	
7		3 x 15-credit optional modules from the Advanced Computing Technologies list above – <u>over 2 years</u>	45	
7	BUCI035D7	MSc Advanced Computing Technologies Project	60	Core

MSc Data Analytics Optional Modules

7	COIY025H7	Advances in Data Management	15	Optional
7	BUCI042H7	Big Data Analytics Using R	15	Optional
7	BUCI029H7	Cloud Computing	15	Optional
7	BUCI057H7	Data Science Techniques and Applications	15	Optional
7	COIY026H7	Data Warehousing and Data Mining	15	Optional
7	COIY064H7	Information Retrieval and Organisation	15	Optional

7	COIY065H7	Intelligent Technologies	15	Optional
7	COIY023H7	Search Engines and Web Navigation	15	Optional

Pathway: MSc Information and Web Technologies - Full Time programme – 1 year

Year 1

Level	Module Code	Module Title	Credits	Status*
7		5 x 15-credit optional modules from the Information and Web Technologies list below	75	Optional
7		3 x 15-credit optional modules from the Advanced Computing Technologies list above	45	Optional
7	BUCI035D7	MSc Advanced Computing Technologies Project	60	Core

Pathway - MSc Information and Web Technologies - Part Time programme

Year 1

Level	Module Code	Module Title	Credits	Status*
7		5 x 15-credit optional modules from the Information and Web Technologies list below – over 2 years	75	Optional
7		3 x 15-credit optional modules from the Advanced Computing Technologies list above – over 2 years	45	Optional

Year 2

Level	Module Code	Module Title	Credits	Status*
7		5 x 15-credit optional modules from the Information and Web Technologies list below – over 2 years	75	Optional
7		3 x 15-credit optional modules from the Advanced Computing Technologies list above – over 2 years	45	Optional
7	BUCI035D7	MSc Advanced Computing Technologies Project	60	Core

MSc Information and Web Technologies Optional Modules

7	COIY025H7	Advances in Data Management	15	Optional
7	COIY029H7	Component-Based Software Development	15	Optional
7	COIY026H7	Data Warehousing and Data Mining	15	Optional
7	COIY064H7	Information Retrieval and Organisation	15	Optional
7	COIY063H7	Internet and Web Technologies	15	Optional
7	COIY047H7	Mobile Computing and the Internet of Things	15	Optional
7	COIY023H7	Search Engines and Web Navigation	15	Optional
7	COIY053H7	Semantic Web	15	Optional

Pathway: MSc Learning Technologies - Full Time programme – 1 year

Year 1

Level	Module Code	Module Title	Credits	Status*
7		8 x 15-credit optional modules from the Advanced Computing Technologies list above	120	Optional
7	BUCI002D7	Project in Learning Technologies	60	Core

Pathway: MSc Learning Technologies - Part Time programme – 2 years				
Year 1				
Level	**Module Code**	**Module Title**	**Credits**	**Status***
7		4 x 15-credit optional modules from the Advanced Computing Technologies list above	60	optional
Year 2				
Level	**Module Code**	**Module Title**	**Credits**	**Status***
7		4 x 15-credit optional modules from the Advanced Computing Technologies list above	60	optional
7	BUCI002D7	Project in Learning Technologies	60	Core

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	**Programme Director**	Professor Peter Wood
21	**Start Date** (term/year)	Autumn 2012
22	**Date approved by TQEC**	Autumn 2011
23	**Date approved by Academic Board**	Spring 2012
24	**Date(s) updated/amended**	March 2018