PROGRAMME SPECIFICATION

Name, title and level of final qualification(s)	**MSc Advanced Computing** *Direct entry pathway:* **MSc Data Analytics and AI** (Level 7)
Name and title of any exit qualification(s)	PG Dip Advanced Computing PG Dip Data Analytics and AI PG Cert Advanced Computing
Awarding Body	University of London
Teaching Institution(s)	Birkbeck, University of London
Home School/other teaching departments	School of Computing and Mathematical Sciences
Location of delivery	Central London
Language of delivery and assessment	English
Mode of study, length of study and normal start month	Full-time (1 year) Part-time (2 years) October
Professional, statutory or regulatory body	Not applicable
[QAA subject benchmark group(s)](#) [Higher Education Credit Framework for England](#)	Computing
Birkbeck Course Code	TMSADCMP_C – MSc Advanced Computing TMSDNLAI_C -MSc Data Analytics and AI
HECoS Code	100366
Start date of programme	Autumn 2012
Date of programme approval	Autumn 2011
Date of last programme amendment approval	December 2024
Valid for academic year and cohorts	**2025-26**
Programme Director	Cen Wan
Date of last revision to document	14/01/2025

Admissions requirements

A second-class honours degree (2:2) or above or MSc in computer science, with the syllabus containing 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.

We welcome applicants without traditional entry qualifications as we base decisions on our own assessment of qualifications, knowledge and previous work experience. We may waive formal entry requirements based on judgement of academic potential.

Course 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 School of Computing and Mathematical Sciences.

In addition to eight taught modules, there is a substantial practical project. Students on the **MSc Data Analytics and AI** pathway take a majority of their taught modules and their project in the areas of data analytics and artificial intelligence.

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.

Course structure

Students on the programme follow any 8 modules from the three lists of modules below and complete a project in one or more of the areas covered by these modules. Students on the **MSc Data Analytics and AI** named pathway follow at least 3 modules from the AI group below, at least 2 from the Data Analytics group below, and the remaining from any group below. In addition, the project for such students must be in the area of Data Analytics and AI.

Level	Module Code	Module Title	Credit	Comp Core/ Option	Likely teaching term(s)
Full-time – 1 year					
7	BUCI035D7	MSc Advanced Computing Project	60	Core	3
7		Option modules x 8	120	Option	1, 2, 3
Part-time – 2 years					
Year 1					
7		Option modules x 4-5	60-75	Option	1, 2, 3
Year 2					
7		Option modules x 3-4	45-60	Option	1, 2, 3
7	BUCI035D7	MSc Advanced Computing Project	60	Core	3

AI modules *(at least 3 must be chosen with a project in data analytics and AI for the award of MSc Data Analytics and AI)*					
7	BUCI077H7	Applied Machine Learning	15	Option	2
7	COIY064H7	Natural Language Processing	15	Option	3
7	COIY065H7	Neural Networks and Deep Learning	15	Option	3
Data Analytics modules *(at least 2 must be chosen with a project in data analytics and AI for the award of MSc Data Analytics and AI)*					
7	COIY025H7	Advances in Data Management	15	Option	2
7	BUCI065H7	Big Data Analytics	15	Option	3
7	BUCI029H7	Advanced Cloud Computing	15	Option	1
7	BUCI042H7	Data Analytics using R	15	Option	2
7	BUCI057H7	Data Science Techniques and Applications	15	Option	3
Other option modules					
7	BUCI040H7	Information and Network Security	15	Option	1
7	COIY063H7	Internet and Web Technologies	15	Option	1
7	COIY062H7	Software Design and Programming	15	Option	2

Core: Module must be taken and passed by student

Compulsory: Module must be taken but can be considered for compensated credit (see CAS regulations paragraph 24)

Option: Student can choose to take this module

How you will learn

Your learning and teaching is organised to help you meet the learning outcomes (below) of the course. As a student, we expect you to be an active learner and to take responsibility for your learning, engaging with all of the material and sessions arranged for you.

Each course is divided into modules. You will find information on the virtual learning site (Moodle, see Academic Support below) about each of your modules, what to expect, the work you need to prepare, links to reading lists, information about how and when you will be assessed.

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.

How we will assess you

The course will use a variety of assessment methods. Assessment is used to enhance your learning rather than simply to test it. For most of the modules associated with this course, your assessment will be through practical lab exercises, coursework and written examinations.

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.

The project is assessed by means of a project proposal (2000-3000 words) and a final 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.

Learning outcomes (what you can expect to achieve)

'Learning outcomes' indicate what you should be able to know or do at the end of your course. Providing them helps you to understand what your teachers will expect and also the learning requirements upon which you will be assessed.

At the end of this course, you should have an advanced ability to:

Subject Specific:
- demonstrate knowledge of advanced computing technologies or data analytics and artificial intelligence

Intellectual:
- analyse critically problems relating to the application of advanced computing technologies
- identify appropriate technical solutions
- evaluate advanced computing technologies in context
- evaluate research publications

Practical:
- use advanced computing technologies or data analytics and AI techniques
- plan, execute and report on project work in advanced computing technologies or data analytics and AI

Personal and Social:
- work and learn independently
- work and learn collaboratively
- plan work and work to deadlines

Careers and further study

You will find Computer Science graduates in the following kinds of roles:

- IT architect
- Programmer
- Data scientist
- Data analyst
- Software engineer
- Systems analyst
- Database administrator
- Web developer
- Systems administrator
- Testing and software quality engineer

Birkbeck offers a range of careers support to its students. You can find out more on the careers pages of our website.

Academic regulations and course management

Birkbeck's academic regulations are contained in its [Common Award Scheme Regulations](#) and Policies published by year of application on the Birkbeck website.

You will have access to a course handbook on Moodle and this will outline how your course is managed, including who to contact if you have any questions about your module or course.

Support for your study

Your learning at Birkbeck is supported by your teaching team and other resources and people in the College there to help you with your study. Birkbeck uses a virtual learning environment called Moodle and each course has a dedicated Moodle page and there are further Moodle sites for each of your modules. This will include your course handbook.

Birkbeck will introduce you to the Library and IT support, how to access materials online, including using Moodle, and provide you with an orientation which includes an online Moodle module to guide you through all of the support available. You will also be allocated a personal tutor and provided with information about learning support offered within your School and by the College.

[Please check our website for more information about student support services.](#) This covers the whole of your time as a student with us including learning support and support for your wellbeing.

Quality and standards at Birkbeck

Birkbeck's courses are subject to our quality assurance procedures. This means that new courses must follow our design principles and meet the requirements of our academic regulations. Each new course or module is subject to a course approval process where the proposal is scrutinised by subject specialists, quality professionals and external representatives to ensure that it will offer an excellent student experience and meet the expectation of regulatory and other professional bodies.

You will be invited to participate in an online survey for each module you take. We take these surveys seriously and they are considered by the course team to develop both modules and the overall courses. Please take the time to complete any surveys you are sent as a student.

We conduct an annual process of reviewing our portfolio of courses which analyses student achievement, equality data and includes an action plan for each department to identify ongoing enhancements to our education, including changes made as a result of student feedback. Our periodic review process is a regular check (usually every four years) on the courses by department with a specialist team including students.

Each course will have an external examiner associated with it who produces an annual report and any recommendations. Students can read the most recent external examiner reports on the course Moodle pages. Our courses are all subject to Birkbeck Baseline Standards for our Moodle module information. This supports the accessibility of our education including expectations of what information is provided online for students.

The information in this programme specification has been approved by the College's Academic Board and every effort has been made to ensure the accuracy of the information it contains.

Programme specifications are reviewed periodically. If any changes are made to courses, including core and/or compulsory modules, the relevant department is required to provide a revised programme specification. Students will be notified of any changes via Moodle.

Further information about specifications and an archive of programme specifications for the College's courses is [available online](#).