PROGRAMME SPECIFICATION

Name, title and level of final qualification(s)	**MSc Data Science** (Level 7)
Name and title of any exit qualification(s)	PG Dip Data Science PG Cert Data Science
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, January (full-time only)
Professional, statutory or regulatory body	Not applicable
QAA subject benchmark group(s) Higher Education Credit Framework for England	Computing
Birkbeck Course Code	TMSDATSC_C TMSDATSJ_C (January start, full-time)
HECoS Code	100366
Start date of programme	October 2016
Date of programme approval	Summer 2016
Date of last programme amendment approval	September 2023
Valid for academic year and cohorts	2023/24
Date of last revision to document	01/09/2023

Admissions requirements

The degree is designed for graduates who are new to computer science, so the main requirement is at least a second-class honours degree (2:2) or equivalent, in any subject other than single-honours Computer Science, along with demonstrated aptitude as tested during the application process.

Applicants with less than the required level of academic qualification may be considered if they have significant 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

The programme provides an intensive course in data science and software engineering for graduates of subjects other than Computer Science.

As well as gaining a broad knowledge of data science and software engineering, students acquire practical problem-solving and analytical skills, while also having the opportunity to investigate certain areas of current research more deeply.

For students who are new to the subject, the programme provides a foundation for a career in IT as a data scientist or analyst; for those already working in IT, it provides an opportunity to strengthen and update their knowledge and skills in the areas of data science and software engineering while obtaining a formal qualification.

Holders of the MSc will have demonstrated a systematic understanding and a critical awareness, much of it at the forefront of the discipline, a comprehensive and practical understanding of applicable techniques, originality in the application of knowledge, the ability to evaluate current research and methodologies, and the independent learning ability required for continuing professional development.

Course structure

Level	Module Code	Module Title	Credit	Comp Core/ Option	Likely teaching term(s)
Full-time – 1 year, October start					
7	BUCI091H7	Analytical Foundations of Data Science	15	Comp	1
7	BUCI063H7	Principles of Programming	15	Comp	1
7	COIY061H7	Data and Knowledge Management	15	Comp	1
7	BUCI042H7	Data Analytics using R	15	Comp	2
7	BUCI057H7	Data Science Techniques and Applications	15	Comp	3
		Option modules (3 x 15 credits)	45	Option	1, 2 or 3
7	BUCI058D7	MSc Data Science Project	60	Core	*see below
Full-time – 1 year, January 2024 start					
Spring and Summer terms 2024					
7	BUCI091H7	Analytical Foundations of Data Science	15	Comp	2
7	BUCI063H7	Principles of Programming	15	Comp	2
7	BUCI042H7	Data Analytics using R	15	Comp	2
7	BUCI057H7	Data Science Techniques and Applications	15	Comp	3
7		Option modules (total of 3 across all terms)	45	Option	2 or 3

Autumn term 2024					
7	COIY061H7	Data and Knowledge Management	15	Comp	1
7		Option modules (total of 3 across all terms)	45	Option	1
7	BUCI058D7	MSc Data Science Project	60	Core	*see below
Part-time – 2 years, October start					
Year 1					
7	BUCI063H7	Principles of Programming	15	Comp	1
7	BUCI091H7	Analytical Foundations of Data Science	15	Comp	1
7	BUCI042H7	Data Analytics using R	15	Comp	2
7		Option modules (total of 3 across both years)	45	Option	2 or 3
Year 2					
7	COIY061H7	Data and Knowledge Management	15	Comp	1
7	BUCI057H7	Data Science Techniques and Applications	15	Comp	3
7		Option modules (total of 3 across both years)	45	Option	1, 2 or 3
7	BUCI058D7	MSc Data Science Project	60	Core	*see below
Indicative option modules					
7	BUCI040H7	Information and Network Security	15	Option	1
7	EMMS011S7	Financial Modelling and Data Science (requires approval from Programme Director)	30	Option	1-2
7	BUCI029H7	Cloud Computing	15	Option	1
7	COIY025H7	Advances in Data Management**	15	Option	2
7	BUCI077H7	Applied Machine Learning	15	Option	1
7	EMMS022H7	Statistical Learning (requires approval from Programme Director)	15	Option	2
7	BUCI065H7	Big Data Analytics	15	Comp	3
7	COIY064H7	Natural Language Processing and Information Retrieval	15	Option	3
7	COIY065H7	Neural Networks and Deep Learning	15	Option	3

*For October cohorts, students start on the Data Science project in October with briefing sessions etc, the project proposal is due in April and project work starts in Summer term, with the majority of the work undertaken during the summer break. For the January cohort, students start in January with briefing sessions etc, with the proposal due in July and the majority of the work undertaken during the summer break and the autumn term extending into early January.

**Note: Advances in Data Management is not available as an option to students starting the programme in January.

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.

Formal lectures are the principal teaching method, but these frequently incorporate practical sessions, for example in programming, and also group exercises carried out in class.

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 assignments, written examinations and the project proposal and final report.

Each student also undertakes an individual project in data science (including background research) which is supervised by a member of staff. The project provides an opportunity for students to investigate in depth an aspect of data science that particularly interests them.

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 be able to:

Subject Specific:

- demonstrate a knowledge of programming (S1),
- understand mathematical and algorithmic foundations of computing (S2),
- appreciate social, legal and professional implications (S3),
- demonstrate knowledge of data and software engineering (S4),
- understand computer architecture and operating systems (S5),
- demonstrate knowledge of data science tools, techniques and applications (S6),
- show an appreciation of research topics related to data science (S7).

Intellectual:

- develop an algorithm to carry out a specified task and to convert this into an executable program (I1),
- debug a program (I2),
- analyse data using appropriate methods (I3),
- plan and carry out a project with a focus on data science spanning several months (I4),
- perform abstract thinking and to exhibit abstraction skills (I5).

Practical:

- write programs in appropriate programming languages (P1),
- retrieve data from a database (P2),
- use tools to analyse data (P3).

Personal and Social:

- demonstrate self-direction and originality in tackling and solving problems (PS1),
- act autonomously in planning and implementing tasks at a professional level (PS2),
- conduct a critical appraisal of material synthesised from research papers (PS3),
- communicate conclusions clearly to specialist and non-specialist audiences (PS4),
- deal with complex issues systematically and creatively (PS5),
- advance further your knowledge, skills and understanding (PS6).

Careers and further study

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

- Data scientist
- Data analyst
- Programmer
- Software engineer
- 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.