QUALITY ASSURANCE DOCUMENT QA3 – PROGRAMME SPECIFICATION

1. Programme Code						
2. Programme Title	MSc Data Science					
3. Target Award Title	MSc Data Science					
4. Exit Award Title(s)	Postgraduate Diploma Data Science Postgraduate Certificate Data Science					
5. Subject area	Data Science					
6. School	Computing					
7. Programme Team Leader(s)	Dr Mohammed Rehman					
8. Programme Type						
9. Delivery Model	DL F/T	ü	BL F/T	ü	Apprenticeship	
	DL P/T	ü	BL P/T	ü	Other	
Where delivery model identified as 'Other' please provide details						
10. Location of delivery	Distance Blended – UK and Berlin study centres					
11. Proposed Start date	May 2024					
12. Reference points	• QAA Subject Benchmark, Computing available here • The UKPSF for teaching and supporting learning in higher education available here. • Arden Excellence Framework for Inclusive Curriculum here • BCS Guidelines for Accreditation available here					
13. Professional, Statutory & Regulatory Bodies (PSRB)	***The following accreditations or part accreditations will be sought:*** ***BCS***					

14. Programme aims
The modern workplace relies on data to function and the need for data specialists is not limited to a particular sector or industry. This programme aims to equip students with the underlying theories behind data science as well as the skills and expertise they need to be able to engage in the gathering, manipulation and analysis of data. The Programme aims to produce graduates that are capable of the following: • Apply problem solving skills and their knowledge of a range of tools and techniques in developing solutions to a variety of scenarios that involve the processing and analysis of data to make business decisions

- Understand the context in which data science operates i.e., the gathering, processing and analysis of data for operational and strategic purposes
- Understand the ethical, legal and moral constraints that impact on their roles as data science professionals
- Undertake independent analysis using a variety of information sources.

15. Programme Entry Requirements

Please adapt standard/typical entry requirements as necessary.

Standard entry requirements:

- A 2.2 Honours degree, or equivalent, in a numerate subject

Typical non-standard entry requirements:

- A minimum of 3 years of relevant work experience, or equivalent.

Standard English language requirements:

- English Language proficiency equivalent to IELTS 6.5, with no less than 6.0 in each component, if English is not the applicant's first language (or appropriate previous study in English).

16. Learning, teaching and assessment methods and strategies

Learning, teaching and assessment strategies will vary according to the module and associated learning outcomes but there are key approaches that are employed across all modules. The programme uses Arden's active learning model, which aims to engage students in critical thinking through interaction with online materials, interactions with tutors and peers and the use of online platforms and tools. Online learning materials and activities, accessed through our Virtual Learning Environment, will be supplemented with practical workshops and in class discussions and activities that explore concepts in more depth. In class activities will include scenarios, case studies, workshops and group discussions that explore concepts, tools and techniques related to data science.

A key approach to teaching in the subject area is a focus on 'learning by doing'. Assessments will aim to engage students in 'authentic' scenarios that mirror real world situations and problems. Practical assessments will enable students to demonstrate their skills and competences in handling, processing and analysis data using a variety of industry standard tools and written elements such as reports will enable students to develop their skills in communicating complex ideas to a variety of technical and non-technical audiences. Opportunities for formative feedback are provided throughout the module ahead of the summative assessment and feedback is designed to give students guidance on areas of strength and areas for development, aligned with clear marking criteria that link to the module learning outcomes.

In order to further develop their skills and connect with others in their discipline students will be encouraged to engage in our enrichment block activities, which include workshops on specific tools, industry speakers and events that enable them to demonstrate their skills e.g. hackathons.

17. Intended programme learning outcomes and the means by which they are achieved and demonstrated		
Learning outcomes	**The means by which these outcomes are achieved**	**The means by which these outcomes are assessed**
At the end of this course you, the student, will be able to: *(No more than 10 programme learning outcomes are permitted per programme.)*		
1. Apply relevant theories and principles to data-driven design, problem-solving, decision-making and planning	Knowledge and understanding gained through interaction with resources made available on our Virtual Learning Environment and an active learning approach that includes synchronous and asynchronous activities and platforms. Students are signposted to further reading that explores concepts in more depth. Real world case studies will enable students to align theory to practice.	Coursework e.g. reports that use concepts and theories to justify approaches taken to the collection and analysis of data. Formative exercises and activities will enable students to develop their understanding of relevant theories and principles.
2. Apply appropriate mathematical and computational tools and methods to specific data science problems or challenges.	Students will engage with resources provided via the Virtual Learning Environment, including video walkthroughs and step by step guides, in order to develop their practical skills. Workshops will allow students to practice their skills either individually or in groups.	Coursework, including the creation of artefacts using appropriate tools and platforms. Formative exercises and activities will enable students to develop their practical skills.
3. Apply predictive modelling techniques in the fields of Machine Learning and Artificial Intelligence and critically analyse the resulting data.	Students will engage with resources provided via the Virtual Learning Environment, including video walkthroughs and step by step guides, in order to develop their practical skills. Workshops will allow students to practice their skills either individually or in groups. Students will demonstrate skills development both individually and collaboratively though collecting information, analysis and evolution of findings and presentation of solutions.	Coursework e.g. reports that critically analyse the results of applying techniques in Machine Learning and Artificial Intelligence.
4. Demonstrate an understanding of the social, ethical, and legal issues that impact on Data Science practitioners.	Students will engage in online and in class activities that explore the issues, building on the learning materials and resources provided in the Virtual Learning Environment. Case studies and scenarios will allow the students to explore concepts and align them with real world context.,	Coursework e.g. reports and presentations that identify and examine relevant issues and their impact on data science practitioners.

5. Develop and apply the research skills required to investigate topics in the field of Data Science.	Skills in research, critical thinking and analysis will be developed through a mixture of online resources provided in the Virtual Learning Environment and activities and further reading provided by tutors. Students will develop their skills through a range of activities both online and in class.	Coursework e.g. reports and presentations.
6. Apply analytical, critical and communication skills in problem solving, information retrieval from various sources, information presentation, working with others and the effective use of general IT facilities and tools.	Skills of gathering data, auditing and analysing datasets and communicating the outcomes to specialists and non-specialists are developed through engagement with resources on the Virtual Learning Environment and through the completion of practical activities, including report writing and presentations.	Coursework e.g. reports and presentations.

18. Graduate Attributes and the means by which they are achieved and demonstrated *Attributes must be covered and assessed in every level of study on a programme.*		
Graduate Attribute	**The means by which these attributes are achieved**	**The means by which these attributes are assessed**
1. Digitally literate	Students interact with a Virtual Learning Environment as well as platforms that enable them to develop their practical skills. Online meetings through platforms such as Zoom and Teams enable students to engage with tutors and peers. Students can engage in extracurricular activities provided through our enrichment blocks, enabling them to undertake additional training, watch guest speakers and access vendor resources.	Students will generate written and practical artefacts demonstrating their digital literacies and practical skills.
2. Contextually innovative	Students will engage in activities and discussions that place their study in context and enable them to examine and propose innovative solutions to problems.	Assessment scenarios that enable students to evaluate differing approaches and evaluate their effectiveness e.g. in reports and artefacts.
3. Socially intelligent and proactively inclusive	Students will engage in online and classroom discussions that promote collaboration and inclusivity and reflect on issues around	Written and practical artefacts that demonstrate an understanding of the

	diversity, equality and inclusion in the context of data science as well as the wider context of respect for fellow learners.	importance of inclusion and the needs of a range of stakeholders.
4. Professional knowledgeable in their subject area	Students will develop a range of practical skills as well as an understanding of the core concepts and techniques used in Data Science so that they can work as professionals in the field.	Assessments that enable students to demonstrate their technical skills as well as their understanding of the issues facing practitioners in the field of data science e.g. reports, artefacts.

19. Summary of modules and mapped programme learning outcomes

List modules in order of delivery

Level	Module Code and Module Title	Module type *Compulsory (C) or Optional (O)*	Pinned/paired Modules	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6					GA1	GA2	GA3	GA4
7	Mathematics for Data Science	C	Pinned	X	X				X								X
7	Programming for Data Analytics	C	Pinned	X	X	X								X			
7	Machine Learning	C			X	X			X								X
7	Big Data and Cloud Computing	C					X	X	X						X		
7	Data Visualisation	C		X	X				X							X	
7	Artificial Intelligence and Neural Networks	C				X	X		X					X			
7	Advanced Computing Project	C		X	X	X	X	X	X								X
Master's (MA/MSc/MBA) To be awarded the Masters, students must complete a total of 180 credits at Level 7 including 60 credits from the final project/dissertation.																	
Master's Top-Up Master's top-up programmes must include 60 credits from the final project/dissertation.																	