PROGRAMME SPECIFICATION

1. Key Information

Programme Title:	BSc(Hons) Data Science
Awarding Institution:	Buckinghamshire New University
Teaching Institution(s):	Buckinghamshire New University
Subject Cluster:	Computing
Award Title (including separate Pathway Award Titles where offered):	BSc(Hons) Data Science BSc(Hons) Data Science with Foundation Year
Pathways (if applicable)	N/A
FHEQ level of final award:	6
Other award titles available (exit qualifications):	Certificate of Higher Education in Data Science Diploma of Higher Education in Data Science Ordinary Degree in Data Science
Accreditation details:	None
Length of programme:	3 years (or 4 years including Foundation Year)
Mode(s) of Study:	Full Time
Mode of Delivery:	In person (on-site) delivery
Language of study:	English
QAA (Quality Assurance Agency) Subject Benchmark(s):	The IfATE Data Analyst Occupational Standards ST0118 (updated 1st June 2021) Subject Benchmark Statement: Computing (30 Mar 2022)
Other external reference points (e.g., Apprenticeship Standard):	British Computer Society Institute of Analytics (IoA)
Course Code(s):	BSDATAFT, BSDATAFY
UCAS Code(s):	
Approval date:	
Date of last update:	September 2025

2. Programme Summary

General Context

Data science can be described simply as the study of data. It involves developing methods of recording, storing, and analysing data to effectively extract useful information. Large amounts of complex data can be exposed to statistical analysis and computational processing to disclose meaningful information that supports decision-making.

Data scientists are in high demand because they can interrogate data and use different analytics to find patterns, trends and relationships in data sets. Their assessment of big data

can reveal interpretations and insights that can be utilised in many contexts, with just some examples highlighted here – businesses can predict and capitalise on consumer behaviour; banking institutions are becoming more savvy when it comes to fraud detection; investors can use a combination of big data and artificial intelligence to make more informed investment choices; pharmaceutical companies are using data analysis to accelerate the development of promising drugs.

Businesses and organisations then rely on data everyday not only operationally but also for insightful and informed decision making, problem solving and for discovery.

Course Details and Philosophy

The requirements and standards of industry have been carefully considered in the programme design. The BSc(Hons) Data Science course is then based around skills and subject themes that have specific and direct relevance to important industry practises and various potential employment destinations as follows:

- Theme 1: Data design, collection, and maintenance
- Theme 2: Data tools (programming/statistics/visualisation/data handling)
- Theme 3: Data visualisation and representation
- Theme 4: Data compliance and ethical use
- Theme 5: Data storytelling and communication
- Theme 6: Automating data with AI

The programme aims to develop you into a talented graduate, equipped with the skills and competencies that industry are looking for in its new recruits – technical skills, transferable skills, business awareness and personal traits, such as, confidence, resilience, adaptability, flexibility and integrity. You will also be learning how to be an effective and self-reliant learner, important in a world where organisations, and their staff, are always being faced with the opportunities offered by embracing new technology and the challenges brought about by change.

There will be progression and development in your learning through the programme, from initially learning the fundamentals in areas, such as, Introduction to Data Analysis, Programming Concepts, and, Data Protection, Ethics and Compliance. Thereafter, going on to expand your knowledge and apply what you have learned during modules, such as, Algorithms and Data Structures, Information Security, and, Data Visualisation and Presentation. More advanced subjects will include Statistical Methods, and, Big Data & AI.

Alongside the structured growth and diversification of your subject knowledge, you will also be enhancing and extending your range of transferable skills through the different levels of the programme, such that you will be acquiring higher order competencies important for academic and professional contexts – for example, creativity in the designing of solutions to problems, curiosity in asking questions, critical thinking, closely scrutinising the accuracy and meaning of results, demonstrating honesty in the data story, and, research skills.

This programme focuses on technical data analysis applications and services for industries that require expertise in data-focused computing sectors, using database development technologies. You will have exposure to industry methologies, specialist technologies and important software tools. The programme provides a balance of theory and practice, providing opportunities to apply knowledge into real projects or work-related problems where possible. You will gain an appreciation of the role that data-based computing can have in a range of business and industry contexts.

You can steer your learning path in Level 6 to have some focus on areas that are of personal interest and importance to you, by choice of options and through selection of Project topic.

Employability Perspective

Graduating from this programme will provide you with opportunities to pursue a number of careers aligned with the domain of Data Science, where opportunities exist across a range of sectors, for example digital-based sectors, Health, Retail, Government and Research. Examples of such career opportunities include Data Analyst, Data Manager, Data Scientist, Data Modeller, Data Architect, and Data Engineer. Accordingly, this BSc(Hons) Data Science programme will place great emphasis on developing your employability skills, and providing you with the competence and confidence to pursue, and succeed in, this exciting and increasingly relied upon asset.

3. Programme Aims and Learning Outcomes

Programme Aims

This programme aims to:

1. Provide learners with, an in-depth understanding of the many and varied dimensions of the field of data science; and, an awareness of, the impact, challenges presented, and the increasing pervasiveness/ubiquity of data in our contemporary world, including distributed data sources
2. Equip learners with relevant technical skills and experience in the use of different technologies, systems, approaches and methodologies relevant for the collection, cleansing, secure storage, analysis, presentation and communication of data
3. Enable learners to systematically and critically analyse the different methods and strategies for addressing various data-related problems, such that they can devise and implement appropriate solutions to meet the needs of pertinent industrial, business and commercial contexts
4. Instil in learners a range of transferable skills to make effective and professional contributions in the workplace, on an individual and team basis; with the awareness and confidence to take responsibility for their continuing personal and professional development as lifelong learners
5. Develop learners to be flexible, open-minded and agile, in determining their approaches to solving problems and taking technical decisions using data analysis tools, within a constantly changing, complex and dynamic professional environment
6. Cultivate learners to have an appreciation of professional, moral, legal, ethical and compliance issues involved in the domains of data science and information technology, including all aspects relating to the handling and management of data

Programme Learning Outcomes

Knowledge and Understanding (K)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
K1	Contextualise and elaborate upon your understanding of the relevant principles, practices, tools, and methods within data analysis, in relation to problems and situations with varying requirements and different degrees of complexity.

K2	Articulate the operation and utilisation of the different computer technologies, software and systems available, for addressing the needs of a variety of tasks, challenges, and projects.
K3	Explain and justify the mathematical and statistical methods that support the effective analysis of different types of data, paying attention to the accuracy, completeness, reliability and relevance traits of that data.
K4	Maintain and discuss your awareness of the business, industrial and commercial contexts in which computer systems are used to undertake the impactful analysis, modelling, and utilisation of data.

Analysis and Criticality (C)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
C1	Undertake objective, and evidence-based, comparisons of the advantages and disadvantages of different technologies and methods, to underpin identification and selection of appropriate approaches for completing given tasks.
C2	Interrogate and solve data-related problems, with appropriate application of analytical and ethical methodologies, whilst demonstrating due compliance with the prevailing laws, regulations, standards and policies.
C3	Monitor, assess and report upon the success of applying innovation to the solution of simple and complex projects, revealing insights and lessons learned that can inform the successful tackling of future challenges and projects.
C4	Display adaptability, flexibility and agility, when faced with changing and unpredictable situations, where new information can necessitate rethink or revision, with regards to, methodology, interpretation of data or consequent decision making.

Application and Practice (P)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
P1	Make effective use of contemporary ideas, theories and techniques in the domains of data science and statistics, being cognisant of social, ethical and other considerations, when formulating/presenting mathematical and statistical arguments, and, when signalling/pursuing solutions to problems.
P2	Competently fulfil the key processes of analysis, design, implementation and testing/validation/evaluation, which underpin the transparent documentation and delivery of project outcomes and problem solutions.
P3	Adhere to the codes of conduct, ethics and standards expected of data science and IT professionals, in relation to the use of computer technology and the management of data at work and in society; including, but not limited to, integrity, competence, honesty, confidentiality, responsibility, respect.
P4	Select and employ methods and techniques of data collection, cleansing, analysis, visualisation, and presentation, which are tailored for context and problem scope.

P5	Implement linear, agile and blended approaches for the planning and management of projects, aimed at building of databases, development of systems, solving problems and completing other tasks, to meet the relevant requirements and timescales.

Transferable skills and other attributes (T)

On successful completion of the programme, you will be able to:

ID	Learning Outcome
T1	Effectively convey information to diverse audiences through written, spoken, and other appropriate forms of presentation.
T2	Apply computational data using information technology to efficiently handle such data and simulations of systems for design and testing.
T3	Reflect and expand upon past experiences towards personal growth and effective team working skills.

Graduate Attributes

The BNU (Buckinghamshire New University) Graduate Attributes of – Knowledge and its application; Creativity; Social and ethical awareness and responsibility; Leadership and self-development – focus on the development of innovative leaders with professional and creative abilities, who are equipped to work in the 21st Century labour market and make a positive impact as global citizens.

Whilst developing as a data analyst on this programme, personal attributes are developed through the practical application of analytical skills, computational principles, algorithmic intricacy, basic statistics, and programming concepts in a variety of creative situations, including real-world scenarios, and life-critical case studies (K1, C1, C2, P3, P4). This includes: the appropriate application of creative thinking and innovation to tasks and problems of varying complexity; effective transfer of skills and knowledge to new contexts or situations; managing self and collaboratively working with others to complete a good standard of work, whilst meeting the requirements and timescales of projects (C3, P5).

Analysis and evaluation approaches are embedded throughout the programme in individual and team tasks, through the appraisal of current and past statistical and analytics techniques and tools supported by the feedback given to your own personal work (C4, P1, T1, T3).

An understanding and awareness of operational applications is fostered with a strong focus given to applying and assessing proper data collection, analysis, and visualisation techniques (K3, C4).

This nurtures the self-efficacy to develop your own work opportunities and to adapt to a constantly evolving technological work environment (K1, K2, K4, C4). Through analysing the historical, social, and cultural contexts of operational computing and web/cloud-based systems, a growing social awareness is formed to ensure professional and ethical values are developed. In conjunction with the confidence to assess existing real-world, life critical systems, whilst appreciating the balance between the needs of 'software' engineering practice, embedded by computing fundamentals (C1, P1, P2, P3, P4, T2, T3).

4. Entry Requirements

The University's general entry requirements will apply to admission to the 3-year version of this Degree programme with the following additions / exceptions:

- Learners will normally have achieved 88-112 UCAS points; however, every application will be assessed on its individual merits.
- We welcome applications from candidates with a wide range of Level 3 qualifications, including A-Levels, BTEC, T Level or equivalent.
- You will be expected to have GCSE Maths and English (Grade 4/C or above) or equivalent.
- If you do not meet the entry requirements you may, if you have relevant professional experience, still be invited for interview, where you will have to show the necessary knowledge and understanding for entry onto the course.
- A 4-year version of the programme (including a Foundation Year) is available for applicants who do not meet the entry criteria for the 3-year Degree.

Previous study, professional and / or vocational experiences may be recognised as the equivalent learning experience and allow exemption from studying certain modules by our accreditation of prior learning (APL) process.

5. Programme Structure

Level	Modules (Code, Title, and Credits)	Exit Awards
Foundation Year	**Core modules:** COM0005 Introduction to Programming COM0006 Computing Essentials COM0007 Core Mathematics COM0008 Design Principles COM0009 Professional Skills Review COM0010 Final Project	**Not Applicable**
Level 4	**Core modules:** COM4008 Programming Concepts (20) COM4020 Data Protection, Ethics, and Compliance (20) COM4013 Cyber Threat and Risk Management (20) COM4019 Data Warehousing (20) COM4012 Computing Computational Fundamentals (20) COM4021 Introduction to Data Analysis Methods (20)	**Certificate of Higher Education**, awarded on achievement of 120 credits at Level 4
Level 5	**Core modules:** COM5018 Data Essentials (20) COM5013 Algorithms and Data Structures (20) COM5004 Machine Learning (20)	**Diploma of Higher Education**, awarded on achievement of 240 credits, of which 120 credits are at Level 5 and 120 credits are at Level 4

	COM5071 Using Programming to Achieve Mathematics (20) COM5015 Information Security (20) COM5070 Data Visualisation and Presentation (20)	
Level 6	**Core modules:** COM6046 Big Data & AI (20) COM6047 Statistical Methods (20) COM6001 Project (40) **Optional modules (totalling 40 credits):** *Choose ONE x 20-credit module from:* COM6023 Advanced Programming (20) COM6010 Advanced Data Technologies (20) COM6008 Knowledge Based Systems in Artificial Intelligence (20) *Choose ONE x 20-credit module from:* COM6009 Learning Machines and Intelligent Agents (20) COM6016 Legal Aspects of IT (20) COM6003 Data Science (20)	**Bachelor of Science (Ordinary Degree)** awarded on achievement of 300 credits, made up of 60 credits at Level 6 (not including COM6001), 120 credits at Level 5, 120 credits at Level 4

6. Learning, Teaching and Assessment

Learning and Teaching

Course delivery utilises a variety of approaches. **Lectures** or **presentations** are a relatively formal approach for providing structured overviews of important subject content, often making reference to **real-world examples**, **applications**, **case studies**, as well as, **emerging technologies and issues**. You may also receive **demonstrations** of, things such as, software tools, methods of calculation and problem solving techniques. Associated activities may be differently labelled as **seminars**, **practicals** or **workshops**, but are all designed, to reinforce/consolidate/develop your knowledge and understanding, or, to apply theories, principles, methods, tools or skills, in order to complete different tasks/projects or to solve given problems. A seminar might have some emphasis on group discussions and exploring answers to questions about particular topics. You will have structured, tutor-guided, sessions where you need to complete problem solving activities using mathematical/statistical methods or make use of software, depending upon the requirements, context and intended outcomes of the task(s). This practical or workshop time will give you experience of completing a mixture of individual tasks and collaborative (group- or team-based) activities, often linked to work-related problems, role-playing scenarios or some simulation of workplace interactions. A scheduled session may have some mixture or integration of the above named teaching and learning approaches.

To maximise your learning, you should be aiming to **attend and actively participate** in your classes, and more generally **engage** with your studies in and out of the classroom. The most successful learners will review, revise and prepare between scheduled classes, undertaking any ‘homework’ indicated by tutors, alongside their own self-identified work, as signalled by their learning needs and priorities at different times during their course.

Your tutors will make use of a **Virtual Learning Environment (VLE)**, a platform that gives you online (on and off campus) access to important information, communications and educational materials to support your studies.

The course has been designed such that your **employability skills**, and workplace readiness, are gradually developed through the different stages of the programme, reflecting the capability, competency and performance levels described in external and professional standards, exemplified by, the **SFIA (Skills Framework for the Information Age)**. Consequently, your skills and capabilities will progress broadly through, ‘follow’ and ‘assist’ at Level 4, ‘apply’ at Level 5, and, ‘enable’ plus (to some extent) ‘ensure’/’advise’ at Level 6. This is supported by a teaching and learning strategy that shifts from a relatively formal teaching and tutor-directed emphasis to more learner-centred responsibility for managing and directing your own learning and development.

The teaching and learning strategy for each individual module is detailed in the relevant and officially validated module proforma.

Assessment

The assessment of this programme includes varied methods that are accessible to you. Assessments are, where possible, authentic, and tied to real-world contexts and constraints, allowing you to practically show the skills you have developed, in readiness for future employment.

For example:

- **Oral presentations** – to showcase your understanding and problem-solving skills, whilst simulating real-world scenarios, such as delivering progress reports to managers or presenting options to clients in professional settings
- **Time-constrained tests or exams** – will provide focus and motivation for learning but also offer experience in an assessment format widely used in industry for recruitment and professional certification in technical domains
- **Assessed tasks, projects and coursework** – are designed to develop knowledge, technical competencies and transferable skills, ensuring readiness for employment and preparation for the demands of the professional world

The **COM6001 Project** module is a particularly important component which may be described as a “capstone” project. You will have the opportunity to apply many things that you have learned from across your course – knowledge, practical and analytical skills, creative and critical thinking – to the development of a solution to some significant problem, typically linked to a personal interest area and likely your career ambitions.

In Level 4, you will encounter various assessments to hone your university learning skills. All tasks will be aligned with course content. Small-scale assignments will have some focus on giving you formative and developmental feedback, while larger tasks serve as formal, summative and graded assessments, reinforcing and advancing your learning.

At Level 5, assessments will be primarily formative and will encourage the development of proper academic practice and concepts. Assessments will be more demanding, with deeper learning and application of knowledge more strongly emphasised.

Level 6 assessments will require the effective, independent and self-reliant learner to combine and synthesise what they have learned and experienced in different modules, applying their skills and knowledge to more complex problems and projects, including the aforementioned independent extended project (COM6001 Project).

Advice, Feedback and Collaborative Learning

Assessment is an integral part of the education process, promoting a focus for consolidating, applying and demonstrating understanding of the subject manner. Summative assessments will not only provide grades but will also generate feedback that will clearly indicate the strengths and weaknesses of your work. Reflecting on comments and advice received will enable you to apply this feedback towards the completion of future tasks and assignments.

Tutor feedback on formal assessment elements is just part of the ongoing dialogue with learners about their development. Different general strategies for timely advice and effective feedback will be adopted, according to your specific needs and module requirements. For instance, examining the work of earlier learners, both good and bad, can provide useful insights into the right content, structure, and presentation of assignments, as well as finding common errors and omissions. Other strategies include using mock exams and formative tests, keeping work portfolios to track progress with regular tutor engagement, offering individual and group tutorials, facilitating peer review of presentations, supplying model answers to complement assessment feedback, engaging in group discussions to promote collaborative learning and reflection, and utilising audio and video recordings to explain complex topics and offer guidance. Technology, such as the virtual learning environment (VLE), can also aid in information sharing, supporting learning, and encouraging collaboration.

Contact Hours

You can expect to receive approximately 12 hours of scheduled learning activities per week. These may include lectures, seminars, workshops, practical sessions, or other defined events. A full breakdown of contact hours can be found in individual module descriptors.

7. Programme Regulations

This programme will be subject to the University's *Regulations for Taught Programmes*. These can be found on the University's results webpages, where you can also find information on how your degree is calculated.

8. Support for Learners

The following systems are in place to support you to be successful with your studies:

- The appointment of a personal tutor to support you through your programme
- A programme handbook and induction at the beginning of your studies
- Library resources, include access to books, journals, and databases - many of which are available in electronic format – and support from trained library staff
- Access to Blackboard, our Virtual Learning Environment (VLE), which is accessible via PC, laptop, tablet, or mobile device
- Access to the MyBNU portal where you can access all University systems, information, and news, record your attendance at sessions, and access your personalised timetable
- Academic Registry staff supplying general guidance on university regulations, exams, and other aspects of students and course administration
- Central student services, including teams supporting academic skills development, career success, student finance, accommodation, chaplaincy, disability, and counselling
- Support from the Bucks Students' Union, including the Students' Union Advice Centre which offers free and confidential advice on university processes.

9. Programme Monitoring and Review

BNU has several ways for monitoring and reviewing the quality of learning and teaching on your programme. You will be able to comment on the content of your programme via the following feedback mechanisms:

- Formal feedback questionnaires and anonymous module 'check-ins'
- Participation in external surveys
- Programme Committees, via appointed student representatives
- Informal feedback to your programme leader

Quality and standards on each programme are assured via the following mechanisms:

- A first event to approve the programme for delivery
- An annual report sent by the External Examiner following a process of external moderation of work sent for assessment
- The Annual Monitoring process, which is overseen by the University's Education Committee
- Review by the relevant PSRB(s)
- Periodic Subject Review events typically held every five years
- Other sector compliance and review mechanisms

10. Internal and External Reference Points

Design and development of this programme has been informed by the following internal and external reference points:

- The Framework for Higher Education Qualifications (FHEQ)
- Institute for Apprenticeships & Technical Education (IfATE)
- Institute of Analytics (IoA) - the professional body for analytics and data science
- The QAA Subject Benchmark Statement for **Computing – Mar 2022** – see detailed mapping below
- The BNU Qualifications and Credit Framework
- The BNU Grading Descriptors
- The University Strategy

Mapping of Subject Benchmark Statement and any relevant Apprenticeship Standard to Programme Learning Outcomes

Subject Benchmark Statement / Apprenticeship Standard:	**Knowledge and understanding (K)**					**Analysis and Criticality (C)**					**Application and Practice (P)**					**Transferable skills and other attributes (T)**				
Benchmark / Standard requirement	**K1**	**K2**	**K3**	**K4**		**C1**	**C2**	**C3**	**C4**		**P1**	**P2**	**P3**	**P4**	**P5**	**T1**	**T2**	**T3**		
Subject knowledge understanding and skills/ Prove an exceptional understanding of the main body of knowledge for their subject and be able to exercise insightful and critical judgement in the use of that knowledge. Be creative and innovative in the application of the principles covered in the curriculum, and be able to go beyond what has been taught in classes	X	X				X	X		X		X		X					X		

Benchmark / Standard requirement	K1	K2	K3	K4		C1	C2	C3	C4		P1	P2	P3	P4	P5	T1	T2	T3		
Intellectual skills/ Critically analyse and apply a wide range of concepts, principles, and practices of the subject in the context of open scenarios, showing refined judgement and adaptability in the choice and use of tools and techniques	X	X	X	X		X	X	X	X		X	X	X	X		X				
Computational problem-solving/ Be able to demonstrate sophisticated judgement, critical thinking, research design, and well-developed problem-solving skills with a high degree of autonomy, and to create highly effective computational artefacts across complex and unpredictable circumstances		X		X		X	X	X	X		X		X				X			

Benchmark / Standard requirement	K1	K2	K3	K4		C1	C2	C3	C4		P1	P2	P3	P4	P5	T1	T2	T3		
Practical skills across the computing lifecycle/ Prove the ability to undertake problem identification and analysis to appropriately design, develop, test, integrate or deploy a complex computing system and any associated artefacts; deeply understand the relationship between stages and be able to prove related sophisticated problem-solving and evidence-informed evaluative skills	X	X		X		X	X	X	X		X	X	X	X	X	X	X	X		
Interpersonal and team working Skills/ Prove the ability to work in a highly proactive and accomplished manner, including as a leading member of a team, making excellent use of tools and techniques to proficiently communicate, manage tasks, and plan projects with minimum guidance	X	X		X				X	X			X	X	X	X			X		

Benchmark / Standard requirement	K1	K2	K3	K4		C1	C2	C3	C4		P1	P2	P3	P4	P5	T1	T2	T3		
Professional practice covering equality, diversity and inclusion, sustainability and entrepreneurship and enterprise education/ Find best-of-kind practices and effect highly principled solutions within a professional, legal, and ethical framework to consistently address a wide breadth of relevant considerations – including data management and use, security, equality, diversity, and inclusion (EDI (Equality, Diversity, and Inclusion)) and sustainability – in the work that they undertake	X					X	X	X	X		X		X		X	X	X	X		

Mapping of Programme Learning Outcomes to Modules

Programme Learning Outcome	**Knowledge and understanding (K)**					**Analysis and Criticality (C)**				**Application and Practice (P)**					**Transferable skills and other attributes (T)**				
Module Code (Core)	**K1**	**K2**	**K3**	**K4**		**C1**	**C2**	**C3**	**C4**	**P1**	**P2**	**P3**	**P4**	**P5**	**T1**	**T2**	**T3**		
Year 1																			
COM4008 Programming Concepts	X	X		X				X	X	X		X	X	X		X	X		
COM4021 Introduction to Data Analysis Methods	X	X		X		X			X			X		X		X			
COM4020 Data Protection, Ethics and Compliance	X	X				X	X		X	X		X			X				
COM4019 Data Warehousing	X	X	X	X				X				X	X	X		X	X		
COM4012 Computing Computational Fundamentals	X	X				X	X		X	X		X	X		X	X			
COM4013 Cyber Threat and Risk Management		X		X		X	X					X							
Year 2																			
COM5013 Algorithms and Data Structures	X	X		X					X			X	X			X	X		
COM5015 Information Security		X	X	X		X	X	X	X	X	X	X			X	X	X		
COM5018 Data Essentials	X	X	X				X	X			X		X	X	X		X		
COM5071 Using Programming to Achieve Mathematics	X	X		X		X			X	X				X	X		X		
COM5070 Data Visualisation and Presentation	X	X		X		X	X	X		X		X	X			X			
COM5004 Machines and Their Languages	X	X	X	X			X			X	X	X			X	X			
Year 3																			
COM6046 Big Data & AI	X		X	X			X				X		X	X	X	X			

COM6047 Statistical Methods	X		X	X		X	X	X		X		X	X	X	X	X			
COM6001 Project	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X			