Buckinghamshire New University

PROGRAMME SPECIFICATION

1. Key Information

Programme Title:	FDSc 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):	FDSc Data Science
Pathways (if applicable)	N/A
FHEQ level of final award:	5
Other award titles available (exit qualifications):	Certificate of Higher Education
Accreditation details:	None
Length of programme:	2 years
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):	
Course Code(s):	FSDATAFT
UCAS Code(s):	
Approval date:	Jan 2024
Date of last update:	June 2025

2. Programme Summary

The FDSc Data Science programme is designed to prepare you for your future career by providing you with the initial educational requirements to develop you to become a high-quality graduate of a bright mind generation who will innovate beyond current practises within the computing industry to inspire future development.

The aim of the programme is to focus on providing a coherent yet flexible programme of study which will immerse and engage learners in a stimulating educational experience producing dynamic graduates who are intellectually competent and vocationally prepared. This programme provides you with the academic qualifications to underpin and progress in

your chosen career. Informed by Industry to provide a practical study platform through a variety of delivery modes.

The design of the programme ensures you will acquire and enhance the full stack of capabilities and skills in the field of data analysis, to embark on careers in this ever-expanding area of computing and gain a strong underpinning of data analysis and development technology. The Data Science programme is further enhanced by alignment with employers recommended knowledge and skills which pave the way towards employment. The programme will provide you with the skills and knowledge to pursue a number of careers within Data Analysis and digital-based sectors, including as Data Analyst, Data Manager, Data Scientist, Data Modeller, Data Architect, and Data Engineer in Business, Retail and Research sectors. Furthermore, the programme will place great emphasis on developing your employability skills, thus providing you with the competence and confidence to succeed in this exciting are of the profession.

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 gain an appreciation of the role that data-based computing can have in a range of business and industry contexts. The programme provides a balance of theory and practice (with more focus on practice), providing opportunities to apply knowledge into real projects where possible. You will acquire a wide range of skills and competences such as the ability to think critically about real-world problems.

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 and programming concepts, algorithms and data structures and data visualisation. before going on to apply what you have learned to various individual and team assignments. Following on from this you will develop your abilities to think strategically about dynamic real-world problems, whilst enhancing and extending your transferable skill set to include analysis, design, research and leadership.

3. Programme Aims and Learning Outcomes

Programme Aims

This programme aims to:

1. Provide learners with a deep understanding of the methodologies, technologies and techniques used within data science and related technologies
2. Enable learners to apply knowledge of data analysis, mathematical and stastical, and programming technologies to the process of collecting, cleansing, analysing and visualise data for industrial, business, and commercial applications, both working individually and working in professional teams
3. Prepare learners to be aware of the impact, challenges presented, the increasing pervasiveness and ubiquity of data in our contemporary world, including where to source proper distributed data sources ethically and aligned with compliance
4. Create opportunities for building solutions using different technologies, architectures, and methodological approaches in the context of varying organisational structures
5. Develop learners to be flexible in the evaluation of different approaches to solving problems and taking technical decisions using data analysis tools, within a constantly changing complex and dynamic professional environment

Programme Learning Outcomes

Knowledge and Understanding (K)

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

ID	Learning Outcome
K1	Demonstrate understanding of the relevant principles, practices, tools, and methods within data analysis that can then be appropriately and systematically applied to given problems and situations.
K2	Differentiate computer technology and systems to a variety of tasks, problems, and projects.
K3	Explain the mathematical and statistical methods that support the effective analysis of several types of data.
K4	Recognise the business, industrial and commercial contexts in which computer systems are used to undertake the 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	Analyse the advantages and disadvantages of different technologies and methods, as potential approaches for completing given tasks.
C2	Examine data related problems when solving these in an analytical, complaint and ethical manner.
C3	Assess the success of applying innovation to the solution of simple and complex projects, revealing information that can used by self and others when addressing future challenges.
C4	Evaluate adaptability and flexibility skills to effectively respond to new, changing, and unpredictable situations, proving higher order thinking abilities.

Application and Practice (P)

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

ID	Learning Outcome
P1	Devise, sustaining social, ethical and mathematical arguments and/to solve problems, using ideas and techniques, some of which are at the forefront of the data science and statistics-based disciplines.
P2	Produce a final year computing-based project involving the key processes of analysis, design, implementation, and testing; underpinned by their associated product documentation.
P3	Apply professional codes of conduct and appreciate the ethical considerations that underpin the acceptance and adoption of computing-based technology in society by professionals, by individuals and by society in general.

P4	Employ the methods and techniques of data collection, cleansing, analysis, visualisation, and presentation.
P5	Implement project management skills to the 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	Communicate data, ideas, problems and solutions to both specialist and non-specialist audiences effectively in writing, speaking and in 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	Consolidate expanding on previous experience to enhance personal development or when leading/working as part of a team.

Graduate Attributes

The BNU (Buckinghamshire New University) Graduate Attributes of: Knowledge and its application; Creativity; Social and ethical awareness and responsibility; and Leadership and self-development focus on the development of innovative leaders in 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, P3, P4, C2).

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. (P1, T1, T3, C4).

An understanding and awareness of operational applications fostered with a strong focus given to applying and assessing a 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 (C4, K1, K2, K4). 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. (P1, P2, P3, C1, T3, T2, P4).

4. Entry Requirements

The University's general entry requirements will apply to admission to this programme.

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.

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
Level 4	COM4012 Computing Computational Fundamentals (20) COM4020 Data Protection, Ethics, and Compliance (20) COM4019 Data Warehousing (20) COM4021 Introduction to Data Analysis Methods (20) COM4008 Programming Concepts (20) COM4013 Cyber Threats and Risk Management (20)	**Certificate of Higher Education**, awarded on achievement of 120 credits at Level 4
Level 5	COM5013 Algorithms and Data Structures (20) COM5018 Data Essentials (20) COM5076 Data Visualisation and Presentation (20) COM5015 Information Security (20) COM5071 Using Programming to achieve Mathematics (20) COM5004 Machine Learning (20)	N/A

6. Learning, Teaching and Assessment

Learning and teaching

In today's world, data analysis is an essential part of every sector and industry, from healthcare to finance, from marketing to transportation, and more. Our teaching and learning methods incorporate a growing emphasis on capability, competency, and performance. This is reflected in a range of activities, including simulated workplace environments, live projects with clients, and placements, as well as newer approaches such as online evaluations, and role-playing scenarios.

The programme places a strong emphasis on practical coursework, both individually and in teams, to help you to develop the skills and knowledge necessary for success in your chosen fields.

The focus of this programme is to provide you with better control of your own educational journey, giving you the tools and techniques to enable you to self-regulate and to optimise your personal performance: self-reflection, performance monitoring, evaluation, and feedback within learning to support a more personalised journey and handle own learning.

Modules on this programme will be taught in line with best practice across the University and in the sector. A variety of approaches, and effective use of the latest technology, will be blended to engage you in the classroom and labs to encourage full engagement and participation.

A range of teaching methods will be used including:

Lectures

This is the most formal teaching strategy employed in teaching the modules. It is used to deliver a body of theoretical information to a large group of learners and is most effective when followed up by a seminar or tutorial session to consolidate learning.

The lecture format may be supported by written handouts, web or library references which serve to reinforce and expand the audio-visual information presented. In addition, staff will make use of the University's VLE (Virtual Learning Environment) and rich-media facilities. This will enable lecturers to enhance the traditional communication and learning mediums, as well as making material available to learners off-site and at the university.

Tutorials / Practical Sessions

Often in smaller groups, tutorials are guided learning sessions, which can either support a formal lecture by working through tutorial sheets with the help of a lecturer or by working through practical exercises in a computing room.

Seminars

These can vary from large group seminars, which provide an opportunity for the learner-led formal debate of topic areas, to 'impromptu' discussion sessions with smaller groups, which may for example follow the showing of a video.

Other techniques such as industrial visits, guest lectures and computer aided learning tools will be used were proper. This variety of techniques is aimed at stimulating your learning. The teaching and learning strategies for individual modules are detailed in the relevant 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.

We have incorporated, where appropriate, the use of capstone activities (to encourage you to think critically, solve challenging problems, and develop professional employability skills) when concluding the session. This brings together knowledge, practical and analytical skills that you have developed throughout the programme. This may take the form of a traditional project, practical coursework, or artifact development.

Furthermore, assessments will provide enough opportunity for the best learners to show a level of innovation and creativity associated with excellence.

During Level 4 you will be exposed to a variety of summative and formative assessments whilst developing the academic skills to be a successful learner at university; course content and learning outcomes strongly relate to you developing your knowledge and understanding of the subjects being studied and assessed.

At Level 5 assessments will be primarily formative and will encourage the development of proper academic practice and concepts. The emphasis will be on frequent small-scale assessments wherever possible with a balance between formative and summative assessment.

Advice, Feedback and Collaborative Learning

Throughout your course you will receive feedback that will clearly show the strengths and weaknesses of your work to enable you to use this in further work you submit.

To ensure effective and timely feedback for you, customised approaches should be adopted, considering your specific requirements and your respective modules. 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 virtual learning environments (VLE), can also aid in information sharing, support learning, and encourage 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 placement hours. 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 their 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 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
- 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	C5	P1	P2	P3	P4		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					X		
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	X	X	X	X		X	X	X	X	X	X	X	X	X		X				

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
adaptability in the choice and use of tools and techniques																				
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				
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		

Learning Outcome																				
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		
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	K5	C1	C2	C3	C4	P1	P2	P3	P4		T1	T2	T3		
Year 1																			
COM4012 Computing Computational Fundamentals	X	X				X	X		X	X		X	X		X	X			
COM4020 Data Protection, Ethics and Compliance	X	X			X	X	X		X	X		X			X				
COM4019 Data Warehousing	X	X	X	X	X			X				X	X			X	X		
COM4021 Introduction to Data Analysis Methods	X	X		X	X	X			X			X				X			
COM4008 Programming Concepts	X	X		X				X	X	X		X	X			X	X		
COM4013 Cyber Threats and Risk Management		X		X				X				X			X		X		
Year 2																			
COM5013 Algorithms and Data Structures	X	X		X	X				X			X	X			X	X		
COM5018 Data Essentials	X	X	X		X		X	X			X		X		X		X		
COM5076 Data Visualisation and Presentation	X	X		X	X	X	X	X		X		X	X			X			
COM5015 Information Security		X	X	X		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		
COM5004 Machine Learning	X			X	X			X	X	X						X	X		