Programme Specification: Undergraduate

For Academic Year 2025/26

1. Course Summary

Names of programme and award title(s)	BSc (Hons) Data Science (apprenticeship programme)
Award type	Single Honours
Mode of study	Part-time
Framework of Higher Education Qualification (FHEQ) level of final award	Level 6
Normal length of the programme	36-48 months
Maximum period of registration	The normal length as specified above plus 3 years
Location of study	Keele Campus
Accreditation (if applicable)	Not applicable
Regulator	Office for Students (OfS); Institute for Apprenticeships
Tuition Fees	**UK students:** Fee for 2024/25: all course fees are paid by the employer and no fees are charged to apprentices. The fee is set at the maximum funding band for this apprenticeship standard set by the Institute for Apprenticeships (IfA), which is a government non-departmental body sponsored by the Department for Education (DFE). We reserve the right to increase the fee in future. Fees will be paid by the employer on behalf of the apprentice using Levy or co-funding arrangements. At no point must any costs for the course be passed to the apprentice. https://www.gov.uk/government/publications/apprenticeship-funding-from-may-2017 A full breakdown of costs is set out in the training plan.

> ***Please note that this document applies to Level 4 (Year 1) and Level 5 (Year 2) students only in 2025/26. Level 6 (Year 3) students should refer instead to the document labelled '2023/24'***

How this information might change: *Please read the important information at http://www.keele.ac.uk/student-agreement/. This explains how and why we may need to make changes to the information provided in this document and to help you understand how we will communicate with you if this happens.*

2. What is a Single Honours Apprenticeship programme?

The programme described in this document allows you to focus on Data Science and relevant areas of Computer Science, while at the same time also allowing you to work for your employer. Thus the course enables you to gain, and be able to demonstrate, a distinctive range of graduate attributes.

The Single Honours Data Scientist Degree Apprenticeship enables apprentices to devote their studies to the tools, techniques, underpinning theories and practical work-based applications that make the science and technology so innovative and exciting. It provides the greatest breadth of learning in the subject, and has been developed in accordance with the requirements of the Standard for Level 6 Data Scientist Degree Apprenticeship.

3. Overview of the Programme

The Single Honours Data Scientist Degree Apprenticeship could be for you if, you are interested in how data science and computing can solve real-world problems! This programme is perfect for those who want to apply data science to various theoretical and practical issues.

In today's world, data-driven computer systems are essential across business, government, science, and society. There's a high demand for professionals who understand how to use software and hardware technologies to tackle complex data analytics and develop innovative analysis systems. This programme delves into the theoretical foundations of data science while emphasizing hands-on experience in data analytics, computer programming, and software development.

Good news there are no specific subject requirements to join! You don't need any prior experience in computing or programming. Any necessary math skills beyond GCSE level will be taught through customized mathematics modules or as part of the data science and computing modules within the programme.

4. Aims of the programme

The broad aims of the programme are to:

1. Equip you with the intellectual, practical, and transferable skills needed to achieve a robust academic foundation in Data Science and relevant aspects of Computer Science.
2. Foster a deep understanding of professional issues and ethical considerations pertinent to your career.
3. Incorporate cutting-edge topics and methodologies in the discipline, informed by current research, industry trends, and market demands.
4. Prepare you to confidently tackle complex data-driven challenges, enhancing your problem-solving and critical thinking abilities.
5. Enable you to effectively communicate data insights and solutions to both technical and non-technical audiences.

With the growing demand for data science and computing expertise, graduates of this programme are well-prepared to assume increasingly challenging roles within their respective organizations, driving innovation and excellence.

5. What you will learn

The intended learning outcomes of the programme (what students should know, understand and be able to do at the end of the programme), can be described under the following headings:

- Subject knowledge and understanding
- Subject specific skills
- Behaviours and transferable skills (including employability skills)
- Work experience abilities and skills

A. Subject knowledge and understanding

In line with the apprenticeship standard for the Data Scientist Degree Apprenticeship successful apprentices will be able to demonstrate knowledge and understanding of:

- The context of Data Science and the Data Science community in relation to computer science, statistics and software engineering. How differing schools of thought in these disciplines have driven new approaches to data systems.
- How Data Science operates within the context of data governance, data security, and communications. How Data Science can be applied to improve an organisation's processes, operations and outputs. How data and analysis may exhibit biases and prejudice. How ethics and compliance affect Data Science work, and the impact of international regulations (including the General Data Protection Regulation). Recognise the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of data science and computer technology and be guided by the adoption of appropriate

professional, ethical and legal practices.
- How data can be used systematically, through an awareness of key platforms for data and analysis in an organisation, including:

1. Data processing and storage, including on-premise and cloud technologies.
2. Database systems including relational, data warehousing & online analytical processing, "NoSQL" and real-time approaches; the pros and cons of each approach.
3. Data-driven decision making and the good use of evidence and analytics in making choices and decisions.

- How to design, implement and optimise analytical algorithms - as prototypes and at production scale - using:

1. Statistical and mathematical models and methods.
2. Advanced and predictive analytics, machine learning and artificial intelligence techniques, simulations, optimisation, and automation.
3. Applications such as computer vision and Natural Language Processing.
4. An awareness of the computing and organisational resource constraints and trade-offs involved in selecting models, algorithms and tools.
5. Development standards, including programming practice, testing, source control.

- The data landscape: how to critically analyse, interpret and evaluate complex information from diverse datasets:

1. Sources of data including but not exclusive to files, operational systems, databases, web services, open data, government data, news and social media.
2. Data formats, structures and data delivery methods including "unstructured" data.
3. Common patterns in real-world data

B. Subject specific skills

Successful apprentices will be able to:

- Identify and clarify problems an organisation faces, and reformulate them into Data Science problems. Devise solutions and make decisions in context by seeking feedback from stakeholders. Apply scientific methods through experiment design, measurement, hypothesis testing and delivery of results. Collaborate with colleagues to gather requirements.
- Perform data engineering: create and handle datasets for analysis. Use tools and techniques to source, access, explore, profile, pipeline, combine, transform and store data, and apply governance (quality control, security, privacy) to data.
- Identify and use an appropriate range of programming languages and tools for data manipulation, analysis, visualisation, and system integration. Select appropriate data structures and algorithms for the problem. Develop reproducible analysis and robust code, working in accordance with software development standards, including security, accessibility, code quality and version control.
- Use analysis and models to inform and improve organisational outcomes, building models and validating results with statistical testing: perform statistical analysis, correlation vs causation, feature selection and engineering, machine learning, optimisation, and simulations, using the appropriate techniques for the problem.
- Implement data solutions, using relevant software engineering architectures and design patterns. Evaluate Cloud vs. on-premise deployment. Determine the implicit and explicit value of data. Assess value for money and Return on Investment. Scale a system up/out. Evaluate emerging trends and new approaches. Compare the pros and cons of software applications and techniques.
- Find, present, communicate and disseminate outputs effectively and with high impact through creative storytelling, tailoring the message for the audience. Use the best medium for each audience, such as technical writing, reporting and dashboards. Visualise data to tell compelling and actionable narratives. Make recommendations to decision makers to contribute towards the achievement of organisation goals.
- Develop and maintain collaborative relationships at strategic and operational levels, using methods of organisational empathy (human, organisation and technical) and build relationships through active listening and trust development.
- Use project delivery techniques and tools appropriate to their Data Science project and organisation. Plan, organise and manage resources to successfully run a small Data Science project, achieve organisational goals and enable effective change.

C. Behaviours and transferable skills (including employability skills)

Successful apprentices will have the opportunity to develop:

- An inquisitive approach: the curiosity to explore new questions, opportunities, data, and techniques; tenacity to improve methods and maximise insights; and relentless creativity in their approach to solutions.
- empathy and positive engagement to enable working and collaborating in multi-disciplinary teams, championing and highlighting ethics and diversity in data work.

- Adaptability and dynamism when responding to varied tasks and organisational timescales, and pragmatism in the face of real-world scenarios.
- Consideration of problems in the context of organisation goals.
- An impartial, scientific, hypothesis-driven approach to work, rigorous data analysis methods, and integrity in presenting data and conclusions in a truthful and appropriate manner.
- A commitment to keeping up to date with current thinking and maintaining personal development. Including collaborating with the data science community.
- The ability to construct well-argued and grammatically correct documents. The ability to locate and retrieve relevant ideas, and ensure these are correctly and accurately referenced and attributed.
- Recognising factors in environmental and societal contexts relating to the opportunities and challenges created by data analytics and computing systems across a range of human activities.

D. Work experience skills

Successful apprentices will be able to:

- Apply academic theory learnt as part of the taught degree to real situations in the workplace.
- Reflect on their work activities and experiences and evaluate their learning in the context of their work.
- Explain how the professional data science and analytics sector operates and identify the skills required to pursue careers within the sector.

The Keele Graduate Attributes

The Keele Graduate Attributes are the qualities (skills, values and mindsets) which you will have the opportunity to develop during your time at Keele through both the formal curriculum and also through co- and extra-curricular activities (e.g., work experience, and engagement with the wider University community such as acting as ambassadors, volunteering, peer mentoring, student representation, membership and leadership of clubs and societies). Our Graduate Attributes consist of four themes: **academic expertise, professional skills, personal effectiveness, and social and ethical responsibility.** You will have opportunities to engage actively with the range of attributes throughout your time at Keele: through your academic studies, through self-assessing your own strengths, weaknesses, and development needs, and by setting personal development goals. You will have opportunities to discuss your progress in developing graduate attributes with, for example, Academic Mentors, to prepare for your future career and lives beyond Keele.

6. How is the programme taught?

Learning and teaching methods used on the programme vary according to the subject matter and level of the module. They include the following:

- **Traditional and online lectures** often supported by copies of lecture slides in print or electronic form
- **Practical sessions** in computer laboratories at workplace or on campus during residential sessions, often supported by copies of laboratory instruction sheets
- **Web-based learning** using the University's virtual learning environment (KLE)
- **Tutorials** online and during residential sessions and directed reading on specific topics under the supervision of a member of academic staff
- **Work-based projects** in which apprentices plan and manage a small Data Science project to provide solutions to an identified problem in order to achieve organisational goals
- **Professional practice** through working for the employer.
- **Helpdesk** is available throughout the semesters to provide academic support, address technical issues. guide administrative processes and support well-being

Apart from these formal activities, apprentices are also provided with regular opportunities to talk through particular areas of difficulty, and any special learning needs they may have, with, for example, their Academic Mentors or Work-place Mentor.

These learning and teaching methods enable apprentices to achieve the learning outcomes of the programme in a variety of ways. For example:

- Online lectures allow apprentices to gain a systematic knowledge and understanding of data science concepts and ideas and how to apply them to development of software and information systems.
- Web-based learning and directed reading allow apprentices to develop their interest in data science, their ability to reflect on their own learning and to take responsibility for its development.
- Group sessions enable apprentices to develop their written and oral communication skills.
- Practical sessions and group work encourages apprentices to work both independently and in collaboration with others as well as enabling them to solve problems in new or unfamiliar environments.
- Helpdesks are available to provide extra support both academically and for general well-being.

7. Teaching Staff

The Data Science academic staff currently comprises Professors, Readers, Senior Lecturers, Lecturers and

Teaching Fellows, of whom a number are Associate Fellows, Fellows and Senior Fellows of the Higher Education Academy. Teaching will also involve demonstrators and session teachers who have significant experience in working in data science and computer science research and delivering practicals to data science and/or computer science apprentices. More information about the Data Science staff is available at http://www.keele.ac.uk/scm/staff/

The University will attempt to minimise changes to our core teaching teams, however, delivery of the programme depends on having a sufficient number of staff with the relevant expertise to ensure that the programme is taught to the appropriate academic standard.

Staff turnover, for example where key members of staff leave, fall ill or go on research leave, may result in changes to the programme's content. The University will endeavour to ensure that any impact on students is limited if such changes occur.

8. What is the structure of the Programme?

The traditional academic year runs from September to June and is divided into two semesters. For the Apprenticeship integrated degree this is extended and complemented by an additional summer period of directed learning. The number of weeks of teaching will vary in each semester, but you can generally expect to attend scheduled teaching sessions between the end of September and mid-December, and from mid-January to the end of April.

Our degree courses are organised into modules. Each module is usually a self-contained unit of study and each is usually assessed separately with the award of credits on the basis of 1 credit = 10 hours of student effort. An outline of the structure of the programme is provided in the tables below.

All modules are compulsory on this programme and you are not able to replace any of the modules with electives.

Year	Compulsory	Optional	
		Min	Max
Level 4	120	0	0
Level 5	120	0	0
Level 6	120	0	0

Module Lists

Level 4

Compulsory modules	Module Code	Credits	Period
Data Ethics, Governance and Security	CSC-10075	30	Semester 1
Programming for Data Science	CSC-10076	30	Semester 1-2
Mathematics and Statistics for Data Science	CSC-10077	30	Semester 1-2
Professional Skills-I	CSC-10078	30	Semester 1-3

Level 5

Compulsory modules	Module Code	Credits	Period
Software Development and Cloud Computing	CSC-20089	15	Semester 1
Artificial Intelligence for Data Scientists	CSC-20085	30	Semester 1-2
Advanced Mathematics and Statistics	CSC-20087	30	Semester 1-2
Professional Skills-II	CSC-20083	30	Semester 1-3
Databases for Data Scientists	CSC-20091	15	Semester 2

Level 6

Compulsory modules	Module Code	Credits	Period
Data Science Project	CSC-30075	30	Semester 1-2
Professional Skills-III	CSC-30073	30	Semester 1-3
Data Scientist End Point Assessment	CSC-30049	60	Semester 3

Learning Outcomes

The table below sets out what students learn in the programme and the modules in which that learning takes place. Details of how learning outcomes are assessed through these modules can be found in module specifications.

Level 6

In Year 1 (Level 4) and Year 2 (Level 5) these learning outcomes are achieved in the compulsory modules which all apprentices are required to take. In Year 3 (Level 6) apprentices will, in addition to taught module assessments, demonstrate achievement in the learning outcomes listed below via the maintenance of a reflective diary (completed throughout Years 1 to 3) which will help develop the End Point Assessment portfolio.

Learning Outcome Successful apprentices will be able to demonstrate knowledge and understanding of:	**Module in which this is delivered**	**Principal forms of assessment** **(of the Level** **Outcome) used**

The context of Data Science and the Data Science community in relation to computer science, statistics and software engineering. How differing schools of thought in these disciplines have driven new approaches to data systems.	Programming for Data Science Professional Skills-I Data Ethics, Governance and Security Maths and Statistics Software Development and Cloud Computing	Portfolio Assignments, and class test End Point Assessment
How Data Science operates within the context of data governance, data security, and communications. How Data Science can be applied to improve an organisation's processes, operations and outputs. How data and analysis may exhibit biases and prejudice. How ethics and compliance affect Data Science work, and the impact of international regulations (including the General Data Protection Regulation.)	Programming for Data Science Data Ethics, Governance and Security Maths and Statistics Maths and Statistics Professional Skills-I, Professional Skills-II	Assignments and class test End Point Assessment

How data can be used systematically, through an awareness of key platforms for data and analysis in an organisation including : 1. Data processing and storage, including on-premise and cloud technologies. 2. Database systems including relational, data warehousing &online analytical processing, "NoSQL" and real-time approaches; the pros and cons of each approach. 3. Data-driven decision making and the good use of evidence and analytics in making choices and decisions.	Professional Skills-I; Professional Skills-II 1. Databases; Software Development for Data Science 2. Databases Software Development and Cloud Computing 1. Advanced Maths and Stats; Programming for Data Science	Assignments and class Test End Point Assessment

How to design, implement and optimise analytical algorithms as prototypes and at production scale - using: 1. Statistical and mathematical models and methods. 2. Advanced and predictive analytics, machine learning and artificial intelligence techniques, simulations, optimisation, and automation. 3. Applications such as computer vision and Natural Language Processing. 4. An awareness of the computing and organisational resource constraints and trade-offs involved in selecting models, algorithms and tools. 5. Development standards, including programming practice, testing, source control.	1. Programming for Data Science ; Advanced Maths and Stats; Programming for Data Science 1. Artificial Intelligence for Data Scientists; Advanced Maths and Stats; Programming for Data Science 1. Artificial Intelligence for Data Scientists 1. Artificial Intelligence for Data Scientists; Data Structures and Algorithms; Programming for Data Science 1. Programming for Data Science ; Software Development and Cloud Computing; Data Ethics, Governance and Security Professional Skills-I; Professional Skills-II	Projects, Assigmnents and class Test End Point Assessment

The data landscape: how to critically analyse, interpret and evaluate complex information from diverse datasets: 1. Sources of data including but not exclusive to files, operational systems, databases, web services, open data, government data, news and social media. 2. Data formats, structures and data delivery methods including "unstructured" data. 3. Common patterns in real-world data	1. Advanced Maths and Stats 2. Databases; Advanced Maths and Stats 3. Advanced Maths and Stats; Artificial Intelligence for Data Science Professional Skills-I; Professional Skills-II; Professional Skills-III	Assignments, and class Test End Point Assessment

Subject Specific Skills		
Learning Outcome Successful apprentices will have the ability to:	**Module in which this is delivered**	**Principal forms of assessment** **(of the** **Level** **Outcome) used**

Identify and clarify problems an organisation faces, and reformulate them into Data Science problems. Devise solutions and make decisions in context by seeking feedback from stakeholders. Apply scientific methods through experiment design, measurement, hypothesis testing and delivery of results. Collaborate with colleagues to gather requirements.	Data Ethics, Governance and Security Advanced Maths and Stats Programming for Data Science Maths and Stats	Assignment and class Test End Point Assessment
Perform data engineering: create and handle datasets for analysis. Use tools and techniques to source, access, explore, profile, pipeline, combine, transform and store data, and apply governance (quality control, security, privacy) to data.	Databases Programming for Data Science Artificial Intelligence for Data Scientists Software Development and Cloud computing Data Ethics, Governance and Security	Project, Assignment and class Test End Point Assessment

Identify and use an appropriate range of programming languages and tools for data manipulation, analysis, visualisation, and system integration. Select appropriate data structures and algorithms for the problem. Develop reproducible analysis and robust code, working in accordance with software development standards, including security, accessibility, code quality and version control.	Programming For Data Science Maths and Stats Software Development and Cloud Computing	Assignments, and class Test End Point Assessment
Use analysis and models to inform and improve organisational outcomes, building models and validating results with statistical testing: perform statistical analysis, correlation vs causation, feature selection and engineering, machine learning, optimisation, and simulations, using the appropriate techniques for the problem.	Maths and Stats Artificial Intelligence for Data Science Data Ethics, Governance and Security	Project, Assignments, and class Test End Point Assessment
Implement data solutions, using relevant software engineering architectures and design patterns. Evaluate Cloud vs. on-premise deployment. Determine the implicit and explicit value of data. Assess value for money and Return on Investment. Scale a system up/out. Evaluate emerging trends and new approaches. Compare the pros and cons of software applications and techniques.	Programming For Data Science Software Development and Cloud Computing Artificial Intelligence for Data Science Data Ethics, Governance and Security	Project, Assignment and class Test. End Point Assessment

Find, present, communicate and disseminate outputs effectively and with high impact through creative storytelling, tailoring the message for the audience. Use the best medium for each audience, such as technical writing, reporting and dashboards. Visualise data to tell compelling and actionable narratives. Make recommendations to decision makers to contribute towards the achievement of organisation goals.	Data Ethics, Governance and Security Artificial Intelligence for Data Scientists	Portfolio and class Test End Point Assessment
Develop and maintain collaborative relationships at strategic and operational levels, using methods of organisational empathy (human, organisation and technical) and build relationships through active listening and trust development.	Professional Skills-I; Professional Skills-II; Professional Skills-III Data Science Project End Point Assessment	Portfolio End Point Assessment
Use project delivery techniques and tools appropriate to their Data Science project and organisation. Plan, organise and manage resources to successfully run a small Data Science project, achieve organisational goals and enable effective change.	Data Ethics, Governance and Security Data Science Project Professional Skills-I; Professional Skills-II; Professional Skills-III End Point Assessment	End Point Assessment

Behaviours and Transferable Skills		
Learning Outcome Successful apprentices will have the opportunity to develop:	**Module in which this is delivered**	**Principal forms of assessment (of the Level** **Outcome) used**

An inquisitive approach: the curiosity to explore new questions, opportunities, data, and techniques; tenacity to improve methods and maximise insights; and relentless creativity in their approach to solutions.	Advanced Maths and Stats Artificial Intelligence for Data Science Data Ethics, Governance and Security Professional Skills-I; Professional Skills-II; Professional Skills-III End Point Assessment	Project, Assignment, and class test End Point Assessment
Empathy and positive engagement to enable working and collaborating in multi-disciplinary teams, championing and highlighting ethics and diversity in data work.	Programming for Data Scientists Artificial Intelligence for Data Science Data Ethics, Governance and Security Professional Skills-I; Professional Skills-II; Professional Skills-III	Project and class test End Point Assessment
Adaptability and dynamism when responding to varied tasks and organisational timescales, and pragmatism in the face of real-world scenarios.	Software Development Advanced Maths and Stats Data Ethics, Governance and Security Professional Skills-I; Professional Skills-II; Professional Skills-III	Assignment and class Test End Point Assessment

Consideration of problems in the context of organisation goals.	Introduction to Data Science with Python Data Ethics, Governance and Security	Assignment and class Test End Point Assessment
An impartial, scientific, hypothesis-driven approach to work, rigorous data analysis methods, and integrity in presenting data and conclusions in a truthful and appropriate manner.	Advanced Maths and Stats Programming for Data Science Artificial Intelligence for Data Science Professional Skills-I; Professional Skills-II; Professional Skills-III	Assignment and class Test End Point Assessment
A commitment to keeping up to date with current thinking and maintaining personal development. Including collaborating with the data science community.	Advanced Maths and Stats Programming for Data Science Artificial Intelligence for Data Science Data Ethics, Governance and Security	Assignment and class Test End Point Assessment

The ability to construct well-argued and grammatically correct documents. The ability to locate and retrieve relevant ideas, and ensure these are correctly and accurately referenced and attributed.	Databases Software Development Artificial Intelligence for Data Science Data Ethics, Governance and Security	Project and class Test End Point Assessment
Recognising factors in environmental and societal contexts relating to the opportunities and challenges created by computing systems across a range of human activities.	Introduction to Data Science with Python Data Ethics, Governance and Security	Assignment and class test End Point Assessment
Work experience skills		
Learning Outcome Successful apprentices will be able to:	**Module in which this is delivered**	**Principal forms of assessment (of the Level** **Outcome) used**
Apply academic theory learnt as part of the taught degree to real situations in the workplace.	Professional Skills-I, II, III	End Point Assessment
Reflect on their work activities and experiences and evaluate their learning in the context of their work	Professional Skills-I, II, III	End Point Assessment
Explain how the professional data science and analytics sector operates and identify the skills required to pursue careers within the sector.	Professional Skills-I, II, III	End Point Assessment

Subject Knowledge and Understanding	
Learning Outcome	**Module in which this is delivered**
See table above	See above

9. Final and intermediate awards

Credits required for each level of academic award are as follows:

BSc (Hons) Data Science, including achievement of apprenticeship standard	360 credits	You will require at least 120 credits at levels 4, 5 and 6 You must accumulate at least 360 credits in Data Science, with at least 120 credits in Level 4, 120 credits in Level 5 and 120 credits in Level 6 (including 60 credits for the End-Point Assessment), to graduate with a named single honours degree in Data Science.
Diploma in Higher Education	240 credits	You will require at least 120 credits at level 4 or higher and at least 120 credits at level 5 or higher
Certificate in Higher Education	120 credits	You will require at least 120 credits at level 4 or higher

Achievement of the End-Point Assessment (EPA) ensures the apprenticeship standard has been met as outlined in the standard EPA assessment criteria. Successful completion of the EPA will signify the completion of the apprenticeship as well as the full degree.

10. How is the Programme Assessed?

The wide variety of assessment methods used on this programme at Keele reflects the broad range of knowledge and skills that are developed as you progress through the degree programme. Teaching staff pay particular attention to specifying clear assessment criteria and providing timely, regular and constructive feedback that helps to clarify things you did not understand and helps you to improve your performance. The following list is representative of the variety of assessment methods used on your programme:

- **Class tests** are taken during the course of a module, usually during a residential period or as an online test via the KLE. They are intended to assess an apprentice's current understanding and subject knowledge in that module in a structured and focused manner. Some taught compulsory modules may have class tests as part of the assessment profile.
- **Assignments** normally consists of work designed to assess an apprentice's knowledge and understanding of the module material. Some of these assignments may be computer based; others take the form of individual reports, essays or group projects.
- **Short reports**: for which apprentices are required to write up their own account of small group studies and discussions on particular topics.
- **Tutorial** Participation, whereby apprentices may be asked to make contributions based on the subject material, either orally or as a written solution, sometimes in consultation with their peers.
- **Projects** are formal reports of work carried out by apprentices undertaking a project. Projects involve the integration and application of theoretical knowledge and problem-solving skills to an identified programming need and/or research problem within the discipline.
- **Group work**: An assessment completed as a group, typically formed of around 4-6 learners. A group assessment can include presentations, posters, essays, reports. A clear guidance on group size, the nature/format of the task to be completed will be provided, peer assessment and reflective writing will be an important component to mark individual contributions.
- **Oral presentations** and reports assess an apprentice's ability to communicate their knowledge and understanding, both visually and orally, to both general and academic audiences.
- **Work-based assessment** is carried out in the workplace, for example through discussion about, and observation of, work practices, and assessment of work products, or away from the workplace, for example through assessment of reports, records, logs, written accounts etc., as well as discussion.
- **Reflective diary** is an account of the apprentice's work in progress, which provides an opportunity for reflection on the learning experience. It provides a means of engaging critically and analytically with content of the programme.
- **End-Point Assessment** is the final stage of the apprenticeship. It consists of the following:

a) Knowledge Test (Class test)
b) Report (based on a work-based project) (Report)
c) Professional Discussion informed by a portfolio (Viva)

Marks are awarded for summative assessments designed to assess your achievement of learning outcomes. You will also be assessed formatively to enable you to monitor your own progress and to assist staff in identifying and addressing any specific learning needs. Feedback, including guidance on how you can improve the quality of your work, is also provided on all summative assessments within three working weeks of submission, unless there are compelling circumstances that make this impossible, and more informally in the course of tutorial and seminar discussions.

11. Contact Time and Expected Workload

The minimum amount of time that should be spent on off-the-job training during an apprenticeship is set at 20%. This means that at least 20% of the apprentice's normal working hours are spent in training in order to achieve the knowledge, skills and behaviours required by the apprenticeship standard. This can include online learning activities such as lectures, seminars, tutorials, project supervision and practical activities; also learning support and time writing assignments. Any training that takes place outside normal working hours or progress reviews are not included in the off-the-job training allocation.

The programme will combine online learning with 3-day block releases, during which students will attend residential sessions on the Keele campus. The block release timetable will feature tutorials, face-to-face lectures, and practical sessions, supported by further independent study. During non-block release weeks, synchronous online teaching sessions will be held one day per week to ensure continuous learning. Additionally, online helpdesk sessions will be available throughout the semesters to offer apprentices extra support. Academic supervisors will be assigned from the first year to facilitate workplace projects and portfolio development.

12. Accreditation

This programme is not currently accredited by a professional body.

13. University Regulations

The University Regulations form the framework for learning, teaching and assessment and other aspects of the student experience. Further information about the University Regulations can be found at: http://www.keele.ac.uk/student-agreement/

If this programme has any exemptions, variations or additions to the University Regulations these will be detailed in an Annex at the end of this document titled 'Programme-specific regulations'.

14. What are the typical admission requirements for the Programme?

See the relevant course page on the website for the admission requirements relevant to this programme: https://www.keele.ac.uk/study/

Applicants for whom English is not a first language must provide evidence of a recognised qualification in English language. The minimum score for entry to the Programme is Academic IELTS 6.0 or equivalent.

English for Academic Purposes

Please note: All new international students entering the university will provide a sample of Academic English during their registration Using this sample, the Language Centre may allocate you to an English language module which will become compulsory. This will replace any GCP modules. *NB:* students can take an EAP module only with the approval of the English Language Programme Director and are not able to take any other Language modules in the same academic year.

English Language Modules at Level 4:

- Business - ENL-90003 Academic English for Business Students (Part 1); ENL-90004 Academic English for Business Students (2)
- Science - ENL-90013 Academic English for Science Students
- General - ENL-90006 English for Academic Purposes 2; ENL-90001 English for Academic Purposes 3; ENL-90002 English for Academic Purposes 4

English Language Modules at Level 5:

- Business - ENL-90003 Academic English for Business Students (Part 1); ENL-90004 Academic English for Business Students (2)
- Science - ENL-90013 Academic English for Science Students
- General - ENL-90006 English for Academic Purposes 2; ENL-90001 English for Academic Purposes 3; ENL-

90002 English for Academic Purposes 4

English Language Modules at Level 6:

- Business - ENL-90003 Academic English for Business Students (Part 1); ENL-90004 Academic English for Business Students (2); ENL-90005 Advanced Business English Communication
- Science - ENL-90013 Academic English for Science Students
- General - ENL-90006 English for Academic Purposes 2; ENL-90001 English for Academic Purposes 3; ENL-90002 English for Academic Purposes 4

Recognition of Prior Learning (RPL) is considered on a case-by-case basis and those interested should contact the Programme Director. The University's guidelines on this can be found here: https://www.keele.ac.uk/qa/programmesandmodules/recognitionofpriorlearning/

Apprentices must be employed by one of Keele's contracted employer partners.

Note that individual employers may set higher entry thresholds based on their recruitment requirements.

15. How are apprentices supported on the programme?

Support for apprentice learning on the Programme is provided in the following ways:

- Module lecturers, teaching fellows and computing laboratory demonstrators are responsible for providing support for learning on the modules. They also give individual feedback on coursework assignments and more general feedback on examinations and tests. Apprentices will be able to access support through electronic systems from the Data Science Apprenticeship teaching team. Every apprentice is allocated to a Personal Academic Tutor (Academic Mentor) who is responsible for reviewing and advising on apprentices' academic progress in Data Science. Apprentices will be able to communicate with their Academic Mentor via email and online office hours, or by appointment outside these hours, for support. Apprentices will also be able to seek support from the teaching team and their tutor during residential periods.
- Every apprentice is allocated to a Personal Workplace Tutor who is responsible for reviewing and advising on apprentices' academic-related workplace-based progress in Data Science. The Personal Workplace Tutor is an employee of the organisation where the apprentice works, and is appointed in agreement with the employer.
- Personal Academic Tutors and Personal Workplace Tutors also act as first points of contact for apprentices on non-academic issues which may affect their learning and can refer apprentices on to a range of specialist health, welfare and financial services co-ordinated by the University's Student Services or on to specialist services offered by their employer.

16. Learning Resources

Data Science is taught in lecture theatres, teaching rooms, computer laboratories and online. The learning resources available to apprentices on the Programme include:

- Dedicated networked PC laboratories within the School of Computing and Mathematics, which use the Microsoft Windows and GNU/Linux operating systems and provide a wide range of supported software. The School buildings are accessible 24 hours a day (with prior arrangement and collection of a key fob to gain access to the building). Apprentices have individual email accounts and file stores on University and School servers.
- Dedicated networked PC laboratories at their employer's premises (provided by their employer), which use the Microsoft Windows and GNU/Linux operating systems and provide a wide range of supported software. These PCs are accessible according to the schedule set by the employer and should be accessible at least for such time that allows the apprentices to do their laboratory work and computer based private study required for the modules that they study. Apprentices have individual email accounts and file stores on the employer's servers. Additional facilities are provided for final year projects at the employer's premises (provided by their employer).
- The Keele Learning Environment (KLE) which provides easy online access to a range of learning resources including lecture notes and other resources supplied in modules.
- Shared file storage area on MS Teams for recorded lectures and other module-related materials.
- The extensive collection of books and journals relevant to undergraduate study held in the University Library. Much of this material is also accessible online to Keele apprentices from anywhere in the world with a University username and password.

17. Additional Costs

Data Scientist Apprenticeship Programme Additional Costs

For apprentices the costs of tuition are covered by the employer and most resources will be available online. It is possible that, as an apprentice, you may incur costs that are not covered by the mandatory components of the

apprenticeship. These typically might include library fines, print costs and costs associated with graduation.

We do not anticipate any further costs for this undergraduate programme.

18. Quality management and enhancement

The quality and standards of learning in this programme are subject to a continuous process of monitoring, review and enhancement.

- The School Education Committee is responsible for reviewing and monitoring quality management and enhancement procedures and activities across the School.
- Individual modules and the programme as a whole are reviewed and enhanced every year in the annual programme review which takes place at the end of the academic year.
- The programmes are run in accordance with the University's Quality Assurance procedures and are subject to periodic reviews under the Revalidation process.

Apprentice evaluation of, and feedback on, the quality of learning on every module takes place every year using a variety of different methods:

- The results of apprentice evaluations of all modules are reported to module leaders and reviewed by the Programme Committee as part of annual programme review.
- Findings related to the programme from the annual National Student Survey (NSS), and from regular surveys of the apprentice experience conducted by the University, are subjected to careful analysis and a planned response at programme and School level.
- Issues raised by the student voice committee, which meets regularly during the semester to discuss apprentices' problems, are considered to improve programme delivery.
- Feedback received from representatives of apprentices in all three years of the programme is considered and acted on at regular meetings of the Student Staff Voice Committee.

The University will also seek feedback from employers at regular intervals as part of the contract management process.

The University appoints senior members of academic staff from other universities to act as external examiners on all programmes. They are responsible for:

- Approving examination questions
- Confirming all marks which contribute to a apprentice's degree
- Reviewing and giving advice on the structure and content of the programme and assessment procedures

Information about current external examiner(s) can be found here:
http://www.keele.ac.uk/qa/externalexaminers/currentexternalexaminers/

For all Apprenticeship programmes there is a requirement for participation in the annual FE Choices survey. When programmes fall into scope there is a six month window where we will encourage you to participate and feed into the national survey.

19. The principles of programme design

The programme described in this document has been drawn up with reference to, and in accordance with the guidance set out in, the following documents:

a. UK Quality Code for Higher Education, Quality Assurance Agency for Higher Education:
http://www.qaa.ac.uk/quality-code

b. QAA Subject Benchmark Statement: Computing (2016) https://www.qaa.ac.uk/quality-code/subject-benchmark-statements?indexCatalogue=document-search&searchQuery=computing&wordsMode=AllWords

c. QAA Apprenticeships Characteristics Statement: https://www.qaa.ac.uk/en/quality-code/supporting-resources

d. Keele University Regulations and Guidance for Students and Staff: http://www.keele.ac.uk/regulations

e. Data Scientist Level 6 Apprenticeship Integrated Degree Standard ST0585, Institute of Apprenticeships, https://www.instituteforapprenticeships.org/apprenticeship-standards/data-scientist-degree/

f. Accreditation criteria, British Computer Society, 2010. http://www.bcs.org/category/5844, http://www.bcs.org/upload/pdf/criteria.pdf

g. Institute for Apprenticeships and Technical Education Data Scientist (Integrated Degree) Assessment Plan: https://www.instituteforapprenticeships.org/media/1973/st0585_data-scientist-integrated-degree_l6_ap-for-publication_230718.pdf

Version History

This document

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Previous documents

Version No	Year	Owner	Date Approved	Summary of and rationale for changes
1	2024/25	NADIA KANWAL	03 September 2024	
2	2023/24	NADIA KANWAL	11 March 2025	Returning for amendments following validation panel
1	2023/24	NADIA KANWAL	19 January 2023	
1	2022/23	ALLISON GARDNER	31 January 2022	
1	2021/22	ALLISON GARDNER	17 August 2021	
1	2020/21	ALLISON GARDNER	24 July 2020	
1	2019/20	EDWARD MCCAULEY	03 October 2019	