Programme Specification: Undergraduate

Academic Year 2021/22

1. Course Summary

Names of programme and award title(s)	BSc (Hons) Data Science BSc (Hons) Data Science with International Year (see Annex for details) BSc (Hons) Data Science with Work Placement Year (see Annex for details)
Award type	Single Honours
Mode of study	Full-time
Framework of Higher Education Qualification (FHEQ) level of final award	Level 6
Normal length of the programme	3 years; 4 years with either the International Year or Placement Year between years 2 and 3
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)
Tuition Fees	**UK students:** Fee for 2021/22 is £9,250* **International/EU students:** Fee for 2021/22 is £17,000** The fee for the international year abroad is calculated at 15% of the standard year fee The fee for the work placement year is calculated at 20% of the standard year fee

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.*

** These fees are regulated by Government. We reserve the right to increase fees in subsequent years of study in response to changes in government policy and/or changes to the law. If permitted by such change in policy or law, we may increase your fees by an inflationary amount or such other measure as required by government policy or the law. Please refer to the accompanying Student Terms & Conditions. Further information on fees can be found at http://www.keele.ac.uk/studentfunding/tuitionfees/*

*** We reserve the right to increase fees in subsequent years of study by an inflationary amount. Please refer to the accompanying Student Terms & Conditions for full details. Further information on fees can be found at http://www.keele.ac.uk/studentfunding/tuitionfees/*

2. What is a Single Honours programme?

The Single Honours programme described in this document allows you to focus more or less exclusively on this subject. In keeping with

Keele's commitment to breadth in the curriculum, the programme also gives you the opportunity to take some modules in other disciplines and in modern foreign languages as part of a 360-credit Honours degree. Thus it enables you to gain, and be able to demonstrate, a distinctive range of graduate attributes.

3. Overview of the Programme

The Data Science Degree is a programme for students with an interest in the application of data science and computing to a wide range of theoretical and real world problems. Data driven computer systems are now vital to business, government, science and society, and there is much demand for graduates with the professional understanding and practical skills to harness software and hardware technologies to solve real-world data analytics problems and develop the data analysis systems of the future. Many of the recent advances in these areas can be attributed to developments in computing and data science, and this trend is likely to increase in speed and impact.

The programme explores the theoretical underpinnings of the data science discipline and places an emphasis on practical data analytics, computer programming and software development. There are no specific subject requirements for entry to the programme, and no previous experience of computing or computer programming is assumed. Any mathematical knowledge needed beyond GCSE level is taught either by tailored mathematics modules developed for data science or as part of the data science and computing modules included in the programme.

4. Aims of the programme

The broad aims of the programme are to:

- Develop your intellectual, practical and additional transferable skills, to enable you to gain a sound academic grounding in the discipline of Data Science and relevant aspects of Computer Science and Mathematics.
- Develop an understanding of the professional issues relevant to your working life.
- Include areas of teaching at the leading edge of the discipline, as informed by subject research, discipline and industry trends and market requirements.

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

Successful students will be able to demonstrate knowledge and understanding of:

LO1.1 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.

LO1.2 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.

LO1.3 How data can be used systematically, through an awareness of key platforms for data and analysis in an organisation, including:

A. Data processing and storage, including on-premise and cloud technologies.

B. Database systems including relational, data warehousing & online analytical processing, "NoSQL" and real-time approaches; the pros and cons of each approach.

C. Data-driven decision making and the good use of evidence and analytics in making choices and decisions.

LO1.4 How to design, implement and optimise analytical algorithms - as prototypes and at production scale - using:

A. Statistical and mathematical models and methods.

B. Advanced and predictive analytics, machine learning and artificial intelligence techniques, simulations, optimisation, and automation.

C. Applications such as computer vision and Natural Language Processing.

D. An awareness of the computing and organisational resource constraints and trade-offs involved in selecting models, algorithms and tools.

E. Development standards, including programming practice, testing, source control.

LO1.5 The data landscape: how to critically analyse, interpret and evaluate complex information from diverse datasets:

A. Sources of data including but not exclusive to files, operational systems, databases, web services, open data, government data, news and social media.

B. Data formats, structures and data delivery methods including "unstructured" data.

C. Common patterns in real-world data.

B. Subject specific skills

Successful students will be able to:

LO2.1 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.

LO2.2 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.

LO2.3 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.

LO2.4 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.

LO2.5 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.

LO2.6 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.

LO2.7 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.

LO2.8 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 students will have the opportunity to develop:

LO3.1 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.

LO3.2 Empathy and positive engagement to enable working and collaborating in multi-disciplinary teams, championing and highlighting ethics and diversity in data work.

LO3.3 Adaptability and dynamism when responding to varied tasks and organisational timescales, and pragmatism in the face of real-world scenarios.

LO3.4 Consideration of problems in the context of organisation goals.

LO3.5 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.

LO3.6 A commitment to keeping up to date with current thinking and maintaining personal development. Including collaborating with

the data science community.

LO3.7 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.

LO3.8 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 abilities and skills

Successful students will be able to:

LO4.1 Apply academic theory learnt as part of the taught degree to real-world scenarios.

LO4.2 Reflect on their study activities and experiences and evaluate their learning in the context of the real world.

LO4.3 Explain how the professional data science and analytics sector operates and identify the skills required to pursue careers within the sector.

Keele Graduate attributes

Engagement with this programme will enable you to develop your intellectual, personal and professional capabilities. At Keele, we call these our ten Graduate Attributes and they include independent thinking, synthesizing information, creative problem solving, communicating clearly, and appreciating the social, environmental and global implications of your studies and activities. Our educational programme and learning environment is designed to help you to become a well-rounded graduate who is capable of making a positive and valued contribution in a complex and rapidly changing world, whichever spheres of life you engage in after your studies are completed.

Further information about the Keele Graduate Attributes can be found here: http://www.keele.ac.uk/journey/

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 lectures** providing students with detailed notes, often supported by copies of lecture slides in print or electronic form.
- **Practical sessions** in computer laboratories often supported by copies of laboratory instruction sheets.
- **Web-based learning** using the University's virtual learning environment (KLE).
- **Tutorials** and **directed reading** on specific topics under the supervision of a member of academic staff.
- **Group project sessions** in which students develop a design for a software item to a level sufficient to allow implementation to follow.

Apart from these formal activities, students are also provided with regular opportunities to talk through particular areas of difficulty, and any special learning needs they may have, with their Personal Tutors or module lecturers on a one-to-one basis.

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

- Lectures allow students to gain a systematic knowledge and understanding of data science concepts and ideas and how to apply them to the development of software and information systems.
- Web-based learning and directed reading allow students 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 students to develop their written and oral communication skills.
- Practical sessions and group work encourages students to work both independently and in collaboration with others as well as enabling them to solve problems in new or unfamiliar environments.

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 students. 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 academic year runs from September to June and is divided into two semesters. The number of weeks of teaching will vary from programme to programme, 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.

There are three types of module delivered as part of your programme. They are:

- Compulsory modules - a module that you are required to study on this course;
- Optional modules - these allow you some limited choice of what to study from a list of modules;
- Elective modules - a free choice of modules that count towards the overall credit requirement but not the number of subject-related credits.

A summary of the credit requirements per year is as follows, with a minimum of 90 subject credits (compulsory plus optional) required for each year.

For further information on the content of modules currently offered, including the list of elective modules, please visit: https://www.keele.ac.uk/recordsandexams/modulecatalogue/

Year	Compulsory	Optional		Electives	
		Min	Max	Min	Max
Level 4	120	0	0	0	0
Level 5	90	15	30	0	15
Level 6	90	15	30	0	15

Module Lists

Level 4

Compulsory modules	Module Code	Credits	Period
Programming I - Programming Fundamentals	CSC-10024	15	Semester 1
Introduction to Data Science I	CSC-10058	15	Semester 1
Introduction to Statistics and Software	MAT-10057	15	Semester 1
Mathematical Techniques for Data Science	MAT-10055	30	Semester 1-2
Communication, Confidence and Competence	CSC-10056	15	Semester 2
Introduction to Data Science II	CSC-10060	15	Semester 2
Statistics	MAT-10053	15	Semester 2

Level 5

Compulsory modules	Module Code	Credits	Period
Programming II - Data Structures and Algorithms	CSC-20037	15	Semester 1
Computational and Artificial Intelligence I	CSC-20043	15	Semester 1
Visualisation for Data Science	CSC-20069	15	Semester 1
Database Systems	CSC-20002	15	Semester 2
Applied Deep Learning	CSC-20071	15	Semester 2
Professional Mathematics and Data Science	MAT-20037	15	Semester 2

Optional modules	Module Code	Credits	Period
Web Technologies	CSC-20021	15	Semester 1
Probability	MAT-20023	15	Semester 1
Individual Study Topic in Computer Science	CSC-20047	15	Semester 1-2
Advanced Programming Practices	CSC-20004	15	Semester 2
Software Engineering	CSC-20041	15	Semester 2
Linear Statistical Models	MAT-20027	15	Semester 2
Operational Research	MAT-20039	15	Semester 2

Level 6

Compulsory modules	Module Code	Credits	Period
Machine Learning Applications	CSC-30041	15	Semester 1
Data Mining	CSC-30043	15	Semester 1
Third Year Double Project - ISP	CSC-30014	30	Semester 1-2
Computational and Artificial Intelligence II	CSC-30027	15	Semester 2
Data Ethics and Security	CSC-30045	15	Semester 2

Optional modules	Module Code	Credits	Period
Bioinformatics	CSC-30022	15	Semester 1
Game Theory	MAT-30049	15	Semester 1
Advanced Databases and Applications	CSC-30002	15	Semester 2
Advanced Web Technologies	CSC-30025	15	Semester 2
Medical Statistics	MAT-30014	15	Semester 2

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 4

Subject Knowledge and Understanding	
Learning Outcome	**Module in which this is delivered**
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.	Mathematical Techniques for Data Science - MAT-10055 Communication, Confidence and Competence - CSC-10056 Introduction to Data Science II - CSC-10060 Introduction to Data Science I - CSC-10058 Introduction to Statistics and Software - MAT-10057
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.)	Introduction to Statistics and Software - MAT-10057 Statistics - MAT-10053 Introduction to Data Science II - CSC-10060 Communication, Confidence and Competence - CSC-10056 Introduction to Data Science I - CSC-10058
How data can be used systematically, through an awareness of key platforms for data and analysis in an organisation, including: Data processing and storage, including on-premise and cloud technologies. Database systems including relational, data warehousing & online analytical processing, "NoSQL" and real-time approaches; the pros and cons of each approach. Data-driven decision making and the good use of evidence and analytics in making choices and decisions.	Introduction to Statistics and Software - MAT-10057 Programming I - Programming Fundamentals - CSC-10024
How to design, implement and optimise analytical algorithms - as prototypes and at production scale - using: Statistical and mathematical models and methods. Advanced and predictive analytics, machine learning and artificial intelligence techniques, simulations, optimisation, and automation. Applications such as computer vision and Natural Language Processing. An awareness of the computing and organisational resource constraints and trade-offs involved in selecting models, algorithms and tools. Development standards, including programming practice, testing, source control.	Mathematical Techniques for Data Science - MAT-10055 Introduction to Data Science II - CSC-10060 Statistics - MAT-10053 Programming I - Programming Fundamentals - CSC-10024 Introduction to Data Science I - CSC-10058 Introduction to Statistics and Software - MAT-10057
The data landscape: how to critically analyse, interpret and evaluate complex information from diverse datasets: Sources of data including but not exclusive to files, operational systems, databases, web services, open data, government data, news and social media. Data formats, structures and data delivery methods including "unstructured" data. Common patterns in real-world data.	Introduction to Data Science II - CSC-10060 Introduction to Data Science I - CSC-10058

Subject Specific Skills	
Learning Outcome	**Module in which this is delivered**
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.	Communication, Confidence and Competence - CSC-10056
Empathy and positive engagement to enable working and collaborating in multi-disciplinary teams, championing and highlighting ethics and diversity in data work.	Introduction to Data Science I - CSC-10058 Communication, Confidence and Competence - CSC-10056 Introduction to Data Science II - CSC-10060
Adaptability and dynamism when responding to varied tasks and organisational timescales, and pragmatism in the face of real-world scenarios.	Communication, Confidence and Competence - CSC-10056 Introduction to Data Science II - CSC-10060 Introduction to Data Science I - CSC-10058
Consideration of problems in the context of organisation goals.	Communication, Confidence and Competence - CSC-10056 Introduction to Data Science I - CSC-10058 Introduction to Data Science II - CSC-10060
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.	Statistics - MAT-10053 Introduction to Statistics and Software - MAT-10057 Introduction to Data Science II - CSC-10060 Introduction to Data Science I - CSC-10058
A commitment to keeping up to date with current thinking and maintaining personal development. Including collaborating with the data science community.	Communication, Confidence and Competence - CSC-10056

Intellectual skills	
Learning Outcome	**Module in which this is delivered**
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.	Introduction to Data Science II - CSC-10060 Communication, Confidence and Competence - CSC-10056 Introduction to Data Science I - CSC-10058
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.	Programming I - Programming Fundamentals - CSC-10024 Introduction to Data Science II - CSC-10060 Statistics - MAT-10053 Mathematical Techniques for Data Science - MAT-10055 Introduction to Data Science I - CSC-10058 Introduction to Statistics and Software - MAT-10057
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 I - Programming Fundamentals - CSC-10024 Introduction to Statistics and Software - MAT-10057
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.	Mathematical Techniques for Data Science - MAT-10055 Statistics - MAT-10053 Introduction to Data Science I - CSC-10058 Introduction to Statistics and Software - MAT-10057 Introduction to Data Science II - CSC-10060
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.	Introduction to Data Science I - CSC-10058 Introduction to Data Science II - CSC-10060
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.	Communication, Confidence and Competence - CSC-10056
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.	Communication, Confidence and Competence - CSC-10056
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.	Communication, Confidence and Competence - CSC-10056

Level 5

Subject Knowledge and Understanding	
Learning Outcome	**Module in which this is delivered**
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.	Visualisation for Data Science - CSC-20069 Computational and Artificial Intelligence I - CSC-20043 Applied Deep Learning - CSC-20071 Individual Study Topic in Computer Science - CSC-20047 Software Engineering - CSC-20041
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.)	Software Engineering - CSC-20041 Individual Study Topic in Computer Science - CSC-20047 Probability - MAT-20023 Visualisation for Data Science - CSC-20069
How data can be used systematically, through an awareness of key platforms for data and analysis in an organisation, including: Data processing and storage, including on-premise and cloud technologies. Database systems including relational, data warehousing & online analytical processing, "NoSQL" and real-time approaches; the pros and cons of each approach. Data-driven decision making and the good use of evidence and analytics in making choices and decisions.	Programming II - Data Structures and Algorithms - CSC-20037 Web Technologies - CSC-20021 Software Engineering - CSC-20041 Individual Study Topic in Computer Science - CSC-20047 Database Systems - CSC-20002 Visualisation for Data Science - CSC-20069 Advanced Programming Practices - CSC-20004
How to design, implement and optimise analytical algorithms - as prototypes and at production scale - using: Statistical and mathematical models and methods. Advanced and predictive analytics, machine learning and artificial intelligence techniques, simulations, optimisation, and automation. Applications such as computer vision and Natural Language Processing. An awareness of the computing and organisational resource constraints and trade-offs involved in selecting models, algorithms and tools. Development standards, including programming practice, testing, source control.	Linear Statistical Models - MAT-20027 Software Engineering - CSC-20041 Advanced Programming Practices - CSC-20004 Visualisation for Data Science - CSC-20069 Programming II - Data Structures and Algorithms - CSC-20037 Operational Research - MAT-20039 Individual Study Topic in Computer Science - CSC-20047 Probability - MAT-20023 Applied Deep Learning - CSC-20071 Computational and Artificial Intelligence I - CSC-20043
The data landscape: how to critically analyse, interpret and evaluate complex information from diverse datasets: Sources of data including but not exclusive to files, operational systems, databases, web services, open data, government data, news and social media. Data formats, structures and data delivery methods including "unstructured" data. Common patterns in real-world data.	Advanced Programming Practices - CSC-20004 Programming II - Data Structures and Algorithms - CSC-20037 Database Systems - CSC-20002 Visualisation for Data Science - CSC-20069

Subject Specific Skills	
Learning Outcome	**Module in which this is delivered**
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.	Programming II - Data Structures and Algorithms - CSC-20037 Individual Study Topic in Computer Science - CSC-20047 Software Engineering - CSC-20041
Empathy and positive engagement to enable working and collaborating in multi-disciplinary teams, championing and highlighting ethics and diversity in data work.	Professional Mathematics and Data Science - MAT-20037 Software Engineering - CSC-20041
Adaptability and dynamism when responding to varied tasks and organisational timescales, and pragmatism in the face of real-world scenarios.	Professional Mathematics and Data Science - MAT-20037 Software Engineering - CSC-20041
Consideration of problems in the context of organisation goals.	Visualisation for Data Science - CSC-20069 Individual Study Topic in Computer Science - CSC-20047 Professional Mathematics and Data Science - MAT-20037 Software Engineering - CSC-20041
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.	Visualisation for Data Science - CSC-20069 Professional Mathematics and Data Science - MAT-20037
A commitment to keeping up to date with current thinking and maintaining personal development. Including collaborating with the data science community.	Professional Mathematics and Data Science - MAT-20037 Individual Study Topic in Computer Science - CSC-20047

Intellectual skills	
Learning Outcome	**Module in which this is delivered**
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.	Visualisation for Data Science - CSC-20069 Operational Research - MAT-20039 Individual Study Topic in Computer Science - CSC-20047 Professional Mathematics and Data Science - MAT-20037
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.	Software Engineering - CSC-20041 Programming II - Data Structures and Algorithms - CSC-20037 Database Systems - CSC-20002 Advanced Programming Practices - CSC-20004 Visualisation for Data Science - CSC-20069
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 II - Data Structures and Algorithms - CSC-20037 Software Engineering - CSC-20041 Advanced Programming Practices - CSC-20004 Visualisation for Data Science - CSC-20069 Web Technologies - CSC-20021
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.	Individual Study Topic in Computer Science - CSC-20047 Linear Statistical Models - MAT-20027 Applied Deep Learning - CSC-20071 Computational and Artificial Intelligence I - CSC-20043 Visualisation for Data Science - CSC-20069 Probability - MAT-20023
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.	Individual Study Topic in Computer Science - CSC-20047 Web Technologies - CSC-20021 Software Engineering - CSC-20041
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.	Professional Mathematics and Data Science - MAT-20037 Individual Study Topic in Computer Science - CSC-20047 Visualisation for Data Science - CSC-20069
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 Mathematics and Data Science - MAT-20037 Individual Study Topic in Computer Science - CSC-20047 Visualisation for Data Science - CSC-20069
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.	Individual Study Topic in Computer Science - CSC-20047 Professional Mathematics and Data Science - MAT-20037 Visualisation for Data Science - CSC-20069

Level 6

Subject Knowledge and Understanding	
Learning Outcome	**Module in which this is delivered**
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.	Data Ethics and Security - CSC-30045 Machine Learning Applications - CSC-30041 Data Mining - CSC-30043 Third Year Double Project - ISP - CSC-30014
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.)	Data Ethics and Security - CSC-30045 Advanced Web Technologies - CSC-30025 Advanced Databases and Applications - CSC-30002
How to design, implement and optimise analytical algorithms - as prototypes and at production scale - using: Statistical and mathematical models and methods. Advanced and predictive analytics, machine learning and artificial intelligence techniques, simulations, optimisation, and automation. Applications such as computer vision and Natural Language Processing. An awareness of the computing and organisational resource constraints and trade-offs involved in selecting models, algorithms and tools. Development standards, including programming practice, testing, source control.	Third Year Double Project - ISP - CSC-30014 Computational and Artificial Intelligence II - CSC-30027 Medical Statistics - MAT-30014 Machine Learning Applications - CSC-30041 Data Mining - CSC-30043
The data landscape: how to critically analyse, interpret and evaluate complex information from diverse datasets: Sources of data including but not exclusive to files, operational systems, databases, web services, open data, government data, news and social media. Data formats, structures and data delivery methods including "unstructured" data. Common patterns in real-world data.	Advanced Databases and Applications - CSC-30002 Data Mining - CSC-30043

Subject Specific Skills	
Learning Outcome	**Module in which this is delivered**
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.	Third Year Double Project - ISP - CSC-30014
Empathy and positive engagement to enable working and collaborating in multi-disciplinary teams, championing and highlighting ethics and diversity in data work.	Data Ethics and Security - CSC-30045 Data Mining - CSC-30043 Third Year Double Project - ISP - CSC-30014
Adaptability and dynamism when responding to varied tasks and organisational timescales, and pragmatism in the face of real-world scenarios.	Data Mining - CSC-30043 Data Ethics and Security - CSC-30045 Third Year Double Project - ISP - CSC-30014
Consideration of problems in the context of organisation goals.	Third Year Double Project - ISP - CSC-30014 Data Ethics and Security - CSC-30045 Data Mining - CSC-30043
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.	Third Year Double Project - ISP - CSC-30014 Data Ethics and Security - CSC-30045
A commitment to keeping up to date with current thinking and maintaining personal development. Including collaborating with the data science community.	Third Year Double Project - ISP - CSC-30014

Intellectual skills	
Learning Outcome	**Module in which this is delivered**
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.	Third Year Double Project - ISP - CSC-30014 Data Ethics and Security - CSC-30045 Data Mining - CSC-30043
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.	Data Ethics and Security - CSC-30045 Third Year Double Project - ISP - CSC-30014 Advanced Databases and Applications - CSC-30002
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.	Data Mining - CSC-30043 Third Year Double Project - ISP - CSC-30014
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.	Data Mining - CSC-30043 Machine Learning Applications - CSC-30041 Medical Statistics - MAT-30014 Third Year Double Project - ISP - CSC-30014
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.	Advanced Web Technologies - CSC-30025 Third Year Double Project - ISP - CSC-30014 Data Ethics and Security - CSC-30045
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.	Third Year Double Project - ISP - CSC-30014
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.	Third Year Double Project - ISP - CSC-30014
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.	Third Year Double Project - ISP - CSC-30014

9. Final and intermediate awards

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

Honours Degree	360 credits	You will require at least 120 credits at levels 4, 5 and 6 You must accumulate at least 270 credits in your main subject (out of 360 credits overall), with at least 90 credits in each of the three years of study, to graduate with a named single honours degree in this subject.
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

International Year option: in addition to the above students must pass a module covering the international year in order to graduate with a named degree including the 'international year' wording. Students who do not complete, or fail the international year, will be transferred to the three-year version of the programme.

Work Placement Year option: in addition to the above students must pass a non-credit bearing module covering the work placement year in order to graduate with a named degree including the 'with Work Placement Year' wording. Students who do not complete, or fail the work placement year, will be transferred to the three-year version of the programme.

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:

- **Unseen examinations** in different formats test a student's knowledge and understanding of computer science topics. Such examinations are of two hours in length and contain compulsory and possibly also optional questions.
- **Class tests** are taken during the course of a module, usually in a lecture slot. They are intended to assess a student'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.
- **Coursework** normally consists of assignments designed to assess student'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 students are required to write up their own account of small group studies and discussions on particular topics.
- **Dissertations** are formal reports of work carried out by students 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. Dissertations describe product and process in extended detail.
- **Oral presentations** and reports assess a student's ability to communicate their knowledge and understanding, both visually and orally, to both general and academic audiences.

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

This contact time measure is intended to provide you with an indication of the type of activity you are likely to undertake during this programme. The data is compiled based on module choices and learning patterns of students on similar programmes in previous years. Every effort is made to ensure this data is a realistic representation of what you are likely to experience, but changes to programmes, teaching methods and assessment methods mean this data is representative and not specific.

Undergraduate courses at Keele contain an element of module choice; therefore, individual students will experience a different mix of contact time and assessment types dependent upon their own individual choice of modules. The figures below are an example of activities that a student may expect on your chosen course by year stage of study. Contact time includes scheduled activities such as: lecture, seminar, tutorial, project supervision, demonstration, practical classes and labs, supervised time in labs/workshop, fieldwork and external visits. The figures are based on 1,200 hours of student effort each year for full-time students.

Activity

	Scheduled learning and teaching activities	Guided independent Study	Placements
Year 1 (Level 4)	26%	74%	0%
Year 2 (Level 5)	26%	74%	0%
Year 3 (Level 6)	14%	86%	0%

12. Accreditation

This programme does not have accreditation from an external 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 who are not currently undertaking any formal study or who have been out of formal education for more than 3 years and are not qualified to A-level or BTEC standard may be offered entry to the University's Foundation Year Programme.

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.

Please note: All non-native English speaking students are required to undertake a diagnostic English language assessment on arrival at Keele, to determine whether English language support may help them succeed with their studies. An English language module may be compulsory for some students during their first year at Keele.

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: http://www.keele.ac.uk/qa/accreditationofpriorlearning/

15. How are students supported on the programme?

Support for student 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. Students do not normally need to make a formal appointment to meet a member of staff. Some staff have dedicated office hours when they guarantee to be in their room and available for enquiries. Other staff have an open door policy, which means students can drop in at any time. Many staff have both.
- Every student is allocated to a Personal Tutor who is responsible for reviewing and advising on students' academic progress in Data Science.
- Personal Tutors also act as a first point of contact for students on non-academic issues which may affect their learning and can refer students on to a range of specialist health, welfare and financial services co-ordinated by the University's Student Services.

16. Learning Resources

Computer Science is taught in lecture theatres, teaching rooms and computer laboratories. The learning resources available to students 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. Students have individual email accounts and file stores on University and School servers. Additional facilities are provided for final year projects.
- 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.
- 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 students from anywhere in the world with a University username and password.

17. Other Learning Opportunities

Study abroad (semester)

Students on the programme have the potential opportunity to spend a semester abroad in their second year studying at one of Keele's international partner universities.

Exactly which countries are available depends on the student's choice of degree subjects. An indicative list of countries is on the website (http://www.keele.ac.uk/studyabroad/partneruniversities/); however this does not guarantee the availability of study in a specific country as this is subject to the University's application process for studying abroad.

No additional tuition fees are payable for a single semester studying abroad but students do have to bear the costs of travelling to and from their destination university, accommodation, food and personal costs. Depending on the destination they are studying at additional costs may include visas, study permits, residence permits, and compulsory health checks. Students should expect the total costs of studying abroad to be greater than if they study in the UK, information is made available from the Global Education Team throughout the process, as costs will vary depending on destination.

Whilst students are studying abroad any Student Finance eligibility will continue, where applicable students may be eligible for specific travel or disability grants. Students studying in Erasmus+ destinations may be eligible for grants as part of this programme. Students studying outside of this programme may be eligible for income dependent bursaries at Keele. Students travel on a comprehensive Keele University insurance plan, for which there are currently no additional charges. Some governments and/or universities require additional compulsory health coverage plans; costs for this will be advised during the application process.

Study Abroad (International Year)

A summary of the International Year, which is a potential option for students after completion of year 2 (Level 5), is provided in the Annex for the International Year.

Work Placement Year

A summary of the Work Placement Year, which is a potential option for students after completion of year 2 (Level 5), is provided in the Annex for the Placement Year.

18. Additional Costs

Data Science Programme Additional Costs

Some travel costs may be incurred if an external project is undertaken in the third year. However, any such costs would be discussed with you before the project was selected. It would be possible for you to select an internal project that would not incur any additional costs.

Students taking the Work Placement Year option will be responsible for organising their own placement with the support of the module tutors. This allows students to choose when and where to carry out their work placement, taking into consideration the potential living and travel expenses incurred and the effect on other times available to earn money. Students are encouraged to consider the potential costs incurred in carrying out the work placements at the time of setting them up. Further guidance and support on these considerations is available from the module tutors.

For international students taking the Work Placement Year option there may be implications and additional costs incurred by this transfer relating to applying for a new student Visa from outside of the UK before the transfer takes place.

These costs have been forecast by the University as accurately as possible but may be subject to change as a result of factors outside of our control (for example, increase in costs for external services). Forecast costs are reviewed on an annual basis to ensure they remain representative. Where additional costs are in direct control of the University we will ensure increases do not exceed 5%.

As to be expected there will be additional costs for inter-library loans and potential overdue library fines, print and graduation. We do not anticipate any further costs for this programme.

19. 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 Internal Quality Audit (IQA) process.

Student 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 student 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 student experience conducted by the University, are subjected to careful analysis and a planned response at programme and School level.
- Feedback received from representatives of students in all three years of the programme is considered and acted on at regular meetings of the Student Staff Voice Committee.

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 student'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/

20. 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 (2019): https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-computing.pdf?sfvrsn=ef2c881_10

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

d. Keele University Placement Learning Code of Practice: https://www.keele.ac.uk/media/keeleuniversity/policyzone20/kiite/Placement%20Learning%20Code%20of%20Practice2015.pdf

e. Data Science (Integrated Degree) Apprenticeship Standard: https://www.instituteforapprenticeships.org/apprenticeship-standards/data-scientist-integrated-degree/

21. Annex - International Year

Data Science with International Year

International Year Programme
Students registered for this Single Honours programme may either be admitted for or apply to transfer during their period of study at Level 5 to the International Year option. Students accepted onto this option will have an extra year of study (the International Year) at an international partner institution after they have completed Year 2 (Level 5) at Keele. Students who successfully complete both the second year (Level 5) and the International Year will be permitted to progress to Level 6. Students who fail to satisfy the examiners in respect of the International Year will normally revert to the standard programme and progress to Level 6 on that basis. The failure will be recorded on the student's final transcript. Study at Level 4, Level 5 and Level 6 will be as per the main body of this document. The additional detail contained in this annex will pertain solely to students registered for the International Year option.
International Year Programme Aims
In addition to the programme aims specified in the main body of this document, the international year programme of study aims to provide students with: 1. Personal development as a student and a researcher with an appreciation of the international dimension of their subject 2. Experience of a different culture, academically, professionally and socially
Entry Requirements for the International Year

Students may apply to the 4-year programme during Level 5. Admission to the International Year is subject to successful application, interview and references from appropriate staff.

The criteria to be applied are:

- Academic Performance - an average of 60% across all modules in Semester 1 at Level 5 is normally required. Places on the International Year are then conditional on achieving an average mark of 54% across all Level 5 modules with no module fails. Where no Semester 1 marks have been awarded performance in 1st year marks and ongoing 2nd year assessments are taken into account.
- General Aptitude (to be demonstrated by application for study abroad, interview during the 2nd semester of year 2 (Level 5), and by recommendation of the student's personal tutor, 1st and 2nd year tutors and programme director)

Students may not register for both an International Year and a Placement Year.

Student Support

Students will be supported whilst on the International Year via the following methods:

- Phone or Skype conversations with Study Abroad tutor, in line with recommended Personal Tutoring meeting points.
- Support from the University's Global Education Team

Learning Outcomes

In addition to the learning outcomes specified in the main text of the Programme Specification, students who complete a Keele undergraduate programme with International Year will be able to:

1. Describe, discuss and reflect upon the cultural and international differences and similarities of different learning environments
2. Discuss the benefits and challenges of global citizenship and internationalisation
3. Explain how their perspective on their academic discipline has been influenced by locating it within an international setting.
4. Communicate effectively in an international setting;
5. Reflect on previous learning within an international context.

These learning outcomes will all be assessed by the submission of a satisfactory individual learning agreement, the successful completion of assessments at the partner institution and the submission of the reflective portfolio element of the international year module.

Regulations

Students registered for the International Year are subject to the programme-specific regulations (if any) and the University regulations. In addition, during the International Year, the following regulations will apply:

Students undertaking the International Year must complete 120 credits, which must comprise *at least 40%* in the student's discipline area.

This may impact on your choice of modules to study, for example you will have to choose certain modules to ensure you have the discipline specific credits required.

Students are barred from studying any module with significant overlap to the Level 6 modules they will study on their return. Significant overlap with Level 5 modules previously studied should also be avoided.

Additional costs for the International Year

Tuition fees for students on the International Year will be charged at 15% of the annual tuition fees for that year of study, as set out in Section 1. The International Year can be included in your Student Finance allocation, to find out more about your personal eligibility see: www.gov.uk

Students will have to bear the costs of travelling to and from their destination university, accommodation, food and personal costs. Depending on the destination they are studying at additional costs may include visas, study permits, residence permits, and compulsory health checks. Students should expect the total costs of studying abroad be greater than if they study in the UK, information is made available from the Global Education Team throughout the process, as costs will vary depending on destination.

Students studying in Erasmus+ destinations may be eligible for grants as part of this programme. Students studying outside of this programme may be eligible income dependent bursaries at Keele.

Students travel on a comprehensive Keele University insurance plan, for which there are currently no additional charges. Some Governments and/or universities require additional compulsory health coverage plans; costs for this will be advised during the application process.

22. Annex - Work Placement Year

Data Science with Work Placement Year

Work Placement Year summary
Students registered for this programme may either be admitted for or apply to transfer during their studies to the 'with Work Placement Year' option (NB: for Combined Honours students the rules relating to the work placement year in the subject where the placement is organised are to be followed). Students accepted onto this programme will have an extra year of study (the Work Placement Year) with a relevant placement provider after they have completed Year 2 (Level 5) at Keele. Students who successfully complete both the second year (Level 5) and the Work Placement Year will be permitted to progress to Level 6. Students who fail to satisfactorily complete the Work Placement Year will normally revert to the 3-year programme and progress to Level 6 on that basis. The failure will be recorded on the student's final transcript. Study at Level 4, Level 5 and Level 6 will be as per the main body of this document. The additional detail contained in this annex will pertain solely to students registered for the Work Placement Year option.
Work Placement Year Programme Aims
In addition to the programme aims specified in the main body of this document, the Work Placement Year aims to provide students with the opportunity to carry out a long-term work-based learning experience (minimum 30 weeks equivalent of full-time work) in the computing sector between Years 2 and 3 (Levels 5 and 6) of their degree programme. The module will be underpinned by employability skills training (as part of their preparation during year 2), reflective assessment, employer and tutor evaluation and support from academic tutors.
Entry Requirements for the Work Placement Year

Admission to the Work Placement Year is subject to successful application, interview and references from appropriate staff. Students have the opportunity to apply directly for the 4-year 'with work placement year' degree programme, or to transfer onto the 4-year programme at the end of Year-1 and in Year-2 at the end of Semester 1. Students who are initially registered for the 4-year degree programme may transfer onto the 3-year degree programme at any point in time, prior to undertaking the year-long work placement. Students who fail to pass the work placement year, and those who fail to meet the minimum requirements of the work placement year module (minimum 30 weeks full time (1,050 hours), or equivalent, work placement), will be automatically transferred onto the 3-year degree programme.

The criteria to be applied are:

- A good University attendance record and be in 'good academic standing'.
- Passed all Year-1 and Year-2 Semester 1 modules with an overall module average of > 55%
- Students undertaking work placements will be expected to complete a Health and Safety checklist prior to commencing their work experience and will be required to satisfy the Health and Safety regulations of the company or organisation at which they are based.
- *(International students only)* Due to visa requirements, it is not possible for international students who require a Tier 4 Visa to apply for direct entry onto the 4-year with Work Placement Year degree programme. Students wishing to transfer onto this programme should discuss this with student support, the academic tutor for the work placement year, and the Programme Lead. Students should be aware that there are visa implications for this transfer, and it is the student's responsibility to complete any and all necessary processes to be eligible for this programme. There may be additional costs, including applying for a new Visa from outside of the UK for international students associated with a transfer to the work placement programme.

Students may not register for both an International Year and a Work Placement Year.

Student Support

Students will be supported whilst on the Work Placement Year via the following methods:

- Regular contact between the student and a named member of staff who will be assigned to the student as their University supervisor. The University supervisor will be in regular contact with the student throughout the year, and be on hand to provide advice (pastoral or academic) and liaise with the Placement supervisor on the student's behalf if required.
- Two formal contacts with the student during the placement year: the University supervisor will visit the student in their placement organization at around the 5 weeks afters placement has commenced, and then visit again (or conduct a telephone/video call tutorial) at around 15 weeks into the placement.
- Weekly supervision sessions will take place with the placement supervisor (or his/her nominee) throughout the duration of the placement.

Learning Outcomes

In addition to the learning outcomes specified in the main text of the Programme Specification, students who complete the 'with Work Placement Year' option will be able to:

LO4.1 Evaluate their own employability skills (via a SWOT Analysis).

LO4.2 Create ILOs for their placement in order to develop the skills areas which they have identified as being weak or needing further enhancement.

LO4.3 Develop, through practice in the work place, the work-related skills identified through their SWOT analysis and ILOs.

LO4.4 Apply academic theory learnt as part of the taught degree to real situations in the work place.

LO4.5 Reflect on their work placement activities and experiences and evaluate the impact on their employability skills.

LO4.6 Explain how the professional computing sector operates and identify the skills required to pursue careers within the sector.

These learning outcomes will be assessed through the non-credit bearing Work Placement Year module (CSC-30024) which is assessed by a Mid-Placement Portfolio, a Final Placement Portfolio and an Oral Presentation.

Regulations

Students registered for the 'with Work Placement Year' option are subject to programme-specific regulations (if any) and the University regulations. In addition, during the Work Placement Year, the following regulations will apply:

- Students undertaking the Work Placement Year must successfully complete the zero-credit rated 'Work Placement Year' module (CSC-30024)
- In order to ensure a high quality placement experience, each placement agency will sign up to a placement contract (analogous to a service level agreement).
- Once a student has been accepted by a placement organisation, the student will make a pre-placement visit and a member of staff identified within the placement contract will be assigned as the placement supervisor. The placement supervisor will be responsible for ensuring that the placement experience meets the agreed contract agreed with the University.
- The placement student will also sign up an agreement outlining his/her responsibilities in relation to the requirements of each organisation.

Students will be expected to behave professionally in terms of:

(i) conforming to the work practices of the organisation; and

(ii) remembering that they are representatives of the University and their actions will reflect on the School and have an impact on that organisation's willingness (or otherwise) to remain engaged with the placement.

Additional costs for the Work Placement Year

Tuition fees for students on the Work Placement Year will be charged at 20% of the annual tuition fees for that year of study, as set out in Section 1. The Work Placement Year can be included in your Student Finance allocation; to find out more about your personal eligibility see: www.gov.uk

Students will have to bear the costs of travelling to and from their placement provider, accommodation, food and personal costs. Depending on the placement provider additional costs may include parking permits, travel and transport, suitable clothing, DBS checks, and compulsory health checks.

A small stipend may be available to students from the placement provider during the placement but this will need to be explored on a placement-by-placement basis as some organisations, such as charities, may not have any extra money available. Students should budget with the assumption that their placement will be unpaid.

Eligibility for student finance will depend on the type of placement and whether it is paid or not. If it is paid, this is likely to affect student finance eligibility, however if it is voluntary and therefore unpaid, should not affect student finance eligibility. Students are required to confirm eligibility with their student finance provider.

International students who require a Tier 4 visa should check with the Immigration Compliance team prior to commencing any type of paid placement to ensure that they are not contravening their visa requirements.

Version History

This document

Date Approved: 08 February 2021

Previous documents

Version No	Year	Owner	Date Approved	Summary of and rationale for changes