BSc (Hons) Data Science Programme Specification

Awarding Body	NCH at Northeastern
Teaching Institution	New College of the Humanities
Apprenticeship Standard	Data Scientist (Integrated Degree) ST0585
Relevant QAA Benchmark Statement	Computing (October 2019); Mathematics, Statistics and Operational Research (October 2019)
HECoS Code	100367 100078 100403
QAA Framework for Higher Education Qualification Level	Honours Level 6
Final Award	BSc (Hons) Data Science
Exit Awards	CertHE Data Science DipHE Data Science
Programme Code	NCHDSDA
Approved Start Dates	6 July 2020
Language of Instruction	English
Language of Assessment	English
Mode of Study	Part-time blended learning; work-based learning
End point assessment	Integrated (60 credits)
End point assessment organisations	TBA
Approval effective from	June 2020
Re-approval due	June 2025

PROGRAMME OVERVIEW

Apprenticeships extend learning beyond the classroom and into the workplace. The aim is to integrate academic learning at degree level with on-the-job practical training to provide a holistic programme of education and training to meet the skills needs of employers now and in the future.

This Degree Apprenticeship programme will develop professional practice, contextualised in the workplace using industry standard technologies and approaches that are shaped by modern businesses. Apprentices studying on this programme are employed by an Employer

(Hiring Business) and are working in a Data Scientist role.[1]

The Apprentice (learner) will study with NCH at Northeastern (Provider) for approximately 60 days a year (or Stage) – i.e. one day per week for 42 weeks each year, and up to three five-day 'bootcamps' in any given year; for the duration of the three-year programme.

Additionally, the learner and employer will commit to a further two days per week, for 42 weeks each year, for provider-guided work-based training. Learners will study 120 credits per year and will be considered part-time learners by NCH at Northeastern. Each course, typically 15 credits, is assessed by a range of activities aligned to industry norms, i.e. almost all assessments relate to workplace activities that are expected in a data science-related occupation. The content, and consequently the learning outcomes and methods of assessment vary between courses. Where possible, assessments will be undertaken in the workplace.

The programme begins with 'Business Fundamentals' to introduce and familiarise learners with the contemporary world of business and is followed by an introduction to 'Mathematical Structures and Methods' that form the foundation of computer science. Next, the programme explores the fundamental ideas of 'Programming Principles' before introducing 'Data Management Systems', which explore how utilising information and leveraging IT can contribute to the diverse success of a broad range of enterprises. The subsequent 'Database Design & Management' course examines data design and structures, and learners learn how to query and manipulate data before applying their learning and exploring programming approaches. Learners will then study 'Cloud Computing', encompassing cybersecurity, cloud storage and online analytical services before finishing with an intensive 'Data Science Bootcamp', where learners will develop practical data science skills using real-world datasets. In year 1, core knowledge, where appropriate, is contextualised using industry-recognised cloud-based platform technology (and solution) training, resulting in industry certification where applicable.

Year 2, or Stage 2, begins with an introduction to 'Linear Algebra and Probability for Data Science', followed by 'Data Analytics': an introductory and practical course on using Python to cleanse, interrogate and manipulate data. Learners bring together their mathematical knowledge and data analytics skills in the first 'Machine Learning and Data Mining' course, which examines a range of common learning algorithms. Learners then dive deeper into database design where they implement a database schema and 'Machine Learning and Data Mining 2' where they learn about advanced modelling techniques such as Bayesian statistics and neural networks. Outputs from machine learning, data mining and data analytics will be visualised in 'Data Visualisation', a course that examines the principles of art and design, modern design software and the art of visual storytelling. Moving away from technical knowledge, the next course, 'IT Project Management' prepares the learner for technical management and covers the IT project lifecycle, before year 2 finishes with a 'Data Synthesis' bootcamp: a rapidly emerging area that brings data together form a variety of sources and formats for expert analysis. Computer Vision and Natural Language Processing will be used as techniques to parse images and language from diverse online media

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[1] 1 A learner must be in a role that provides the opportunities to gain the knowledge, skills and behaviours needed to achieve their apprenticeship; i.e. a pathway to a competent Data Scientist (DS). A DS finds information in diverse datasets to address complex problems and improve organisational processes. They are inquisitive, they explore and visualise data of all kinds, find and present 'stories' within the data in a meaningful way to a range of technical and non-technical audiences. They make recommendations to inform strategic and operational decision making through sourcing, accessing and manipulating data, and engineering data processes.

content. Like in year 1, year 2 core knowledge is contextualised using industry-recognised cloud. based platform technology (and solution) training embedded through the courses, resulting in industry certification where applicable.

Year 3 covers cutting-edge 'Advances in Data Science', 'Big Data', 'Software Engineering' and 'Implementing Data Science'. The course finishes year 3 with an extensive 'Synoptic Project and End Point Assessment (EPA)'.

Dedicated Apprenticeship Tutors/Advisors will undertake regular workplace visits (approximately every six/eight weeks) and provide supplementary support.

STRUCTURE OF THE DIGITAL AND TECHNOLOGY SOLUTIONS PROGRAMME (360 CREDITS)

The apprenticeship is taught at undergraduate level.

STAGE 1 (LEVEL 4)

Optional 'work ready bootcamp' (0 credits)

Compulsory Courses

NCHNAP443 Business Fundamentals (15 credits)

NCHNAP444 Mathematical Structures and Methods (15 credits)

NCHNAP445 Intensive Foundations of Computer Science and Programming I (15 credits)

NCHNAP446 Data Management Systems (15 credits)

NCHNAP447 Database Design and Management I (15 credits)

NCHNAP448 Intensive Foundations of Computer Science and Programming II (15 credits)

NCHNAP451 Cloud Computing (15 credits)

NCHNAP452 Data Science Bootcamp (15 credits)

STAGE 2 (LEVEL 5)

Compulsory Courses

NCHNAP555 Information Technology Project Management (15 credits)

NCHNAP556 Database Design and Management II (15 credits)

NCHNAP562 Linear Algebra and Probability for Data Science (15 credits)

NCHNAP558 Data Analytics (15 credits)

NCHNAP563 Machine Learning and Data Mining I (15 credits)

NCHNAP564 Machine Learning and Data Mining II (15 credits)

NCHNAP557 Data Visualisation (15 credits)

NCHNAP565 Data Synthesis (15 credits)

STAGE 3 (LEVEL 6)

Compulsory Courses

NCHAP693 Advances in Data Science (15 credits)

NCHAP694 Big Data (15 credits)

NCHAP688 Software Engineering (15 credits)

NCHAP691 Implementing Data Science (15 credits)

NCHAP692 Data Science Synoptic Project and End Point Assessment (60 credits)

ENTRANCE REQUIREMENTS

The learner will need to apply for a degree apprenticeship role within a hiring business, or already be in employment with responsibilities to be aligned with the degree content.

Entry requirements are agreed then set, based on numerous factors including availability of additional on-the-job support, by both the Employer and Provider. As such, entrance requirements may vary between apprenticeships. Learners are selected based on their application, an interview and an assessment process which is tailored to the learner's apprenticeship position.

Typically, employers require:

- Three A levels (or equivalent at CCC or above)
- At least Grade 4/C GCSE Maths, English and IT

Some applicants may not have traditional qualifications as listed above, and have prior learning and skills developed from the workplace, these will be considered on a case-by-case basis.

Learners will also need to meet the government's eligibility criteria:

- Have been a UK/EU/ESS resident for the past three years or more prior to starting the programme.
- Have left full-time education prior to the start date of the apprenticeship.
- Be aged at least 16 years old to meet government funding criteria.

RECOGNITION OF PRIOR LEARNING

Where a learner is eligible to apply for the recognition of prior learning on the basis of certificated or experiential learning, this will be considered in the Initial Needs Analysis, as per Education Skills and Funding Agency (ESFA) Funding Rules, and will take due consideration of the NCH at Northeastern's Recognition of Prior Learning and Credit Transfer Policy.

AIMS OF THE PROGRAMME

The overall aim of the programme is to:

- Offer specialist degree level study that underpins the Level 6, Data Scientist (Integrated Degree) apprenticeship.
- Offer a programme of study that meets the needs and expectations of businesses and organisations and supports the career development of data scientist professionals.
- Provide flexible and broad access to an incrementally structured learning experience that is designed to encourage and enable a diverse range of learners to work within a range of organisations and businesses.

- To support the development of specialist data science skills that will be valued and supported within work-based contexts.

- Place the specialist study of data science within a broad contextual framework; provide learners with an understanding of the role played by data scientists and how their specific and transferable knowledge and skills are applied in a range of professional contexts.

- Develop a good understanding of the principles, theories and technologies that enable the professional practice of data science.

- Provide learners with a rich and varied academic experience that is designed to support the integration of theory and practice within the workplace.

- Instil a strong professional work ethic that encourages independence, empathy and a strong awareness of ethical, legal and social issues that pertain to the role of a data scientist

- Encourage and support self-determined, independence, critical self-reflection and advanced communication skills.

- Develop a high standard of written English, mathematics and presentation skills.

- Blend the development of business, mathematical, computing and technical understanding with a raft of related transferrable skills that enable learners to develop their careers and operate successfully as data scientists within a range of professional contexts.

PROGRAMME LEARNING OUTCOMES

KNOWLEDGE (TECHNICAL)

A learner will be able to:

K1c Demonstrate a systematic understanding of the context of Data Science and the Data Science community in relation to computer science, statistics and software engineering. Understand data governance, data security, data bias and ethics, and how Data Science can be applied to improve an organisation's processes, operations and outputs.

K2c Demonstrate a conceptual understanding and awareness of key platforms for data and analysis in an organisation that enables learners to solve problems.

K3c Demonstrate a conceptual understanding and ability to design, implement and optimise analytical algorithms – as prototypes and at production scale – using ideas and techniques, some of which are at the forefront of a discipline.

K4c Demonstrate an ability to critically analyse, interpret and evaluate complex information from diverse datasets.

SUBJECT SPECIFIC SKILLS

A learner will be able to:

S1c   Use project management techniques to identify organisational problems, gather requirements, identify solutions, apply scientific methods, deliver results and make decisions by seeking feedback from stakeholders.

S2c   Use data engineering tools and techniques to source, access, explore, profile, pipeline, combine, transform and store data, and apply governance to data. Implement data solutions using relevant software engineering architectures (on premise and cloud), project delivery techniques and collaborative relationships to achieve organisational goals.

S3c   Identify and use an appropriate range of programming languages and algorithms and develop models for data manipulation, analysis, visualisation, and system integration. Develop reproducible analysis and robust code, working in accordance with software development standards.

S4c   Find, present, communicate and disseminate outputs effectively and with high impact, creative storytelling, tailoring the message for both specialist and non-specialist audiences. Make recommendations to decision makers.

TRANSFERABLE AND PROFESSIONAL SKILLS (BEHAVIOURS)

A learner will be able to:

B1c   Demonstrate an inquisitive and creative approach to finding solutions with the curiosity to explore new questions, opportunities, data, and techniques; and the tenacity to improve methods and maximise insights. Additionally, will demonstrate adaptability and dynamism when responding to varied tasks and organisational timescales, and pragmatism in the face of real-world scenarios.

B2c   Demonstrate empathy and positive engagement when working and collaborating in multi-disciplinary teams, championing and highlighting ethics and diversity in data work.

B3c   Demonstrate 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; with consideration of problems in the context of organisation goals.

B4c   Demonstrate a commitment to keeping up to date with current thinking and maintaining personal development, including collaborating with the data science community.

All of the above learning outcomes are mapped to the relevant QAA Subject Benchmark threshold statements and Apprenticeship Standard.

MAP OF COURSES TO LEARNING OUTCOMES

Course Title	Knowledge and Understanding												Subject-specific Skills												Transferable and Professional Skills (Behaviours)											
	K1a	K1b	K1c	K2a	K2b	K2c	K3a	K3b	K3c	K4a	K4b	K4c	S1a	S1b	S1c	S2a	S2b	S2c	S3a	S3b	S3c	S4a	S4b	S4c	B1a	B1b	B1c	B2a	B2b	B2c	B3a	B3b	B3c	B4a	B4b	B4c
FHEQ Level 4																																				
Business Fundamentals	X												X			X			X									X			X			X		
Mathematical Structures and Methods							X									X			X												X					
Intensive Foundations of Computer Science and Programming I							X									X			X												X					
Data Management Systems	X			X									X			X									X						X			X		
Database Design and Management I				X						X						X			X						X						X					
Intensive Foundations of Computer Science and Programming II							X									X			X												X					
Cloud Computing	X			X												X															X					
Data Science Bootcamp	X			X						X			X			X			X			X			X			X			X					
FHEQ Level 5																																				
Information Technology Project Management		X						X						X		X			X							X		X			X					
Database Design and Management II				X						X						X			X							X					X					
Linear Algebra and Probability for Data Scientists							X							X		X			X							X					X					
Data Analytics				X						X			X			X			X			X				X					X			X		
Machine Learning and Data Mining I				X				X		X			X			X			X			X				X					X			X		
Machine Learning and Data Mining I				X				X		X			X			X			X			X				X					X			X		
Data Visualisation		X		X									X						X			X				X			X		X			X		
Data Synthesis				X				X		X			X			X										X					X			X		
FHEQ Level 6																																				
Advances in Data Science									X						X	X			X								X					X				X
Big Data			X		X							X				X			X								X					X				X
Software Engineering									X							X			X								X					X				X

Course Title	Knowledge and Understanding												Subject-specific Skills												Transferable and Professional Skills (Behaviours)											
	K1a	K1b	K1c	K2a	K2b	K2c	K3a	K3b	K3c	K4a	K4b	K4c	S1a	S1b	S1c	S2a	S2b	S2c	S3a	S3b	S3c	S4a	S4b	S4c	B1a	B1b	B1c	B2a	B2b	B2c	B3a	B3b	B3c	B4a	B4b	B4c
Implementing Data Science			X			X			X						X			X			X			X			X			X			X			X
Data Science Synoptic Project and End Point Assessment			X			X			X			X			X			X			X			X			X			X			X			X

TEACHING AND LEARNING STRATEGIES

STRATEGIES

The apprenticeship is studied through blended work-based learning, over a 3-year period, and is delivered through the online interactive virtual learning environment (VLE).

The achievement of the Programme Learning Outcomes is supported primarily through an extensive range of e-learning interactions and materials. Delivery methods include:

- Lectures (synchronous face-to-face or via over the web technology, and pre-recorded)
- Seminars for small group discussion (including online discussion)
- Informal discussion groups (including online discussion)
- Assessments
- Links to related reading material
- Individual learning plans (ILP)
- Online presentations
- Participation in online forums
- Consolidation and revision sessions
- Independent study and research
- Final project

Regular in-depth formative feedback is provided to the learner, with advice and guidance to support their achievement in summative assessments. The programme aims to progressively enhance data science knowledge and skills - as well as maths, English and communication skills - as they practice and apply their newly found knowledge and skills in the workplace. Regular tri-partite reviews between the learner (apprentice), their apprenticeship advisor (provider) and workplace line manager (employer) formally monitor and evaluate the learner's progress.

The blended-learning work-based programme ensures that learners have the opportunity to explore their subject in an incrementally structured, well-managed and appropriate manner. It develops the knowledge, core and subject-specific skills, and transferable skills, required by learners and enhances their confidence. The combination of academic study and work-based learning is a key feature of the apprenticeship. Practical and theoretical experiences in the workplace, in tandem with their academic studies, develop and enhance the learner's specialist knowledge, skills and behaviours.

Assessment tasks increase in complexity and level of demand from year (or Stage) 1, where introductory tasks assess the demonstration of knowledge, skills and abilities and establish the foundations of learning. Whereas, in the final year (Stage) of the programme, the synthesis of advanced knowledge, understanding, critical thinking and professional skills, are assessed to meet the expectations of a degree level apprenticeship.

Learners are supported to acquire and practice a wide range of transferable skills. These include problem solving, analysis, strategic thinking and interpersonal and communication skills. Learners will be effective team players within their work environments and fully participate in presentation work during their studies. Importantly, they are also encouraged to balance these cooperative interpersonal skills with responsibilities and self-development

within the apprenticeship. These graduate qualities are supported throughout the apprenticeship from an initial rigorous non-credit two-week block of classroom teaching (bootcamp), that includes the core computing and business skills needed to become an effective team member in the workplace, as well as an introduction to the demands and challenges of the apprenticeship, basic study skills and needs/expectations of employers.

Induction for all new learners includes a welcome to NCH at Northeastern by the Director of Apprenticeships; introduction to key personnel including the Student and Academic Services (SAS); Programme Leader; Course Leaders; and Apprenticeship Advisers to introduce learners to the programme they are about to embark upon. There are also sessions on library services, IT and facilities, and an induction from the Quality Team.

The programme is designed to progress steadily over the three years and develop learners' conceptual sophistication through cumulative experience and knowledge. The final project will allow learners to develop their thinking in collaboration with an academic supervisor.

NCH at Northeastern recognises and has embedded the expectations of current equality legislation, by ensuring that the programme is as accessible as possible by design.

Additional alternative arrangements for learners with Inclusive Learning Plans (IncLPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

Applicants with a disability are encouraged to declare their disability during the application process under the Initial Needs Analysis. Once declared, SAS will work with the learner to agree a support plan for the duration required. This plan will form part of the Commitment Statement and will be reviewed at the tri-partite reviews every six/eight weeks to confirm that this support is effective.

SAS facilitates all academic and learner services, and oversees learner wellbeing; careers advice is provided for learners via NCH at Northeastern Careers Team.

ASSESSMENT

Course are assessed in a variety of ways including:

FORMATIVE

- Tests or quizzes
- Essays or reports
- Short answers and problem sets
- Oral presentations/debates/discussions

SUMMATIVE

- Computer-based examination
- Written assignment
- Dissertation
- Practical skills assessment
- Oral assessment
- Presentation

- Set exercise
- Project

Appendix C contains the programme structure and assessment summary.

ASSESSMENT REGULATIONS

The assessment regulations can be found on the NCH at Northeastern website.

END POINT ASSESSMENT

The end-point assessment is integrated into the Data Scientist (Integrated Degree) apprenticeship as detailed in the Institute for Apprenticeships & Technical Education Assessment Plan. In summary, the apprenticeship culminates in an examination, the final synoptic project dissertation and a presentation. The final synoptic project is a substantial piece of work, typically taking around six months to undertake alongside the learner's normal duties to their employer. The end point assessment integrates the project outcomes and presentation into the overall synoptic project assessment. It is this end point assessment which will be judged against the standard, and test the skills, knowledge and behaviours together as applied through the project.

AWARDS

This programme is studied over 36 months as a blended, work-based, learning programme, whereby the learner will study with the provider for approximately 60 days a year (or Stage) – i.e. one day per week for 42 weeks each year, and up to three five-day 'bootcamps' in any given year for the duration of the three-year programme; this is termed 'off-the-job' training. Additionally, the learner and employer will commit to a further two days per week, for 42 weeks each year, for provider-guided work-based tasks and training. All three years (Stages) are worth 120 credits (= 1200 hours of learning time), comprising multiple courses. This allows seven weeks for annual leave. The final 60 credits (= 600 hours of learning time) will comprise the workplace project and EPA, spanning 18 weeks. 'Off-the-job' training (20%) will comprise 126 hours, with a further 474 hours spent on the project/EPA during the 'on-the-job' time (80%).

Learners must successfully complete each course in order to be awarded the specified number of credits for that course. One credit corresponds to approximately ten hours of 'learning time' (including all online and face-to-face delivery, all private study and research, and relevant aspects of on-the-job learning). Thus obtaining 120 credits in a year (or Stage) requires 1,200 hours of overall learning time.

Each course, and indeed the overall programme, is designed to be at a specific level. The programme comprises courses at Level 4, 5 and 6 leading to successful completion of an undergraduate degree level award. Compulsory courses are core to the programme and must be successfully taken by all learners studying the programme. Learners must attend face-to-face courses/bootcamps.

Where a learner fails a course(s) due to illness or other mitigating circumstances, such failure may not be compensated or condoned.

To be eligible for the award of an Honours degree, learners must obtain 360 credits, where 120 of which must be at Level 5, and 120 credits at Level 6.

Learners successfully completing Stage 1 of the programme who do not successfully complete Stage 2 will be eligible for the award of the Certificate (CertHE) in Data Science. Learners successfully completing Stage 1 and Stage 2 of the programme who do not successfully complete Stage 3 will be eligible for the award of the Diploma (DipHE) in Data Science.

The grading of the degree award is made up of the synoptic project assessment (Data Scientist [Integrated Degree] Assessment Plan) together with numerous course assessments. The Honours degree award and classification is based on a weighted average mark of the assessed work (summative assessments only) the learner has completed. Being 60 credits, the Synoptic Project and EPA contributes significantly to the final year (Stage) mark. The final year (Stage 3) contribution to the overall degree grading is 75%, and the contribution of Stage 2 courses is 25% of the overall degree grade and classification. The Synoptic Project and EPA must be passed to achieve the degree award. The pass mark for a course is 40%, and all component assessments must be passed.

CLASSIFICATIONS

Learners are graded using Honours degree classifications for English universities, and follows the QAA (Quality Assurance Agency for Higher Education) Code of Practice for the Assurance of Academic Quality and Standards in Higher Education. The national degree award outcomes are shown below with apprenticeship grading equivalence.

Degree award classification	Grading equivalence	Marks level (%)
First class honours (1st)	Distinction	70+
Second-class honours, upper division (2i)	Merit	60-69
Second-class honours, lower division (2ii)	Pass	50-59
Third-class honours (3rd)	Pass	40-49

EXEMPTIONS FROM THE NCH AND NORTHEASTERN'S ACADEMIC QUALTIY FRAMEWORK

None.

SPECIAL PROVISIONS FOR PROFESSIONAL STATUTORY AND REGULATORY BODY

None.

QUALITY EVALUATION AND ENHANCEMENT

REVIEW AND EVALUATION MECHANISMS

NCH at Northeastern has robust procedures, as described in AQF4 Programme and Course Approval and Modifications and AQF5 Annual Monitoring and Reporting, in place to assure the quality of the programme's development, delivery, and management, alongside the systematic monitoring, ongoing review and enhancement of all programmes awarded by

NCH at Northeastern. Enhancements are made as necessary to ensure that systems remain effective and rigorous.

NCH at Northeastern utilises constructive feedback from a variety of sources, internal and external, to inform its decision-making process to enhance the programme and the learner experience. These feedback sources include:

- Annual programme reports, written by the Programme Director, are prepared in order to enhance individual programmes and to plan ahead.

- Annual Examiner reports are prepared by independent External Examiners to confirm that a programme has been assessed in accordance with the approved documentation and that the learner performance meets the appropriate academic standards.

- Education and Skills Funding Agency Employer and Apprentice surveys.

- Formal learner feedback mechanisms consist of course and programme learner satisfaction questionnaires and Apprentice Voice Committee.

- Informal learner feedback is also valued by NCH at Northeastern and this can take the form of learners talking to their Apprenticeship Advisor (which incorporates the personal tutor role), Lecturers, professional staff, or elected learner representative.

In addition to academic progress monitoring, progression also includes checking that the learner is achieving planned levels of off-the-job learning required by the apprenticeship as set out in the Commitment Statement. This six/eight-weekly discussion between the apprenticeship advisor, line manager and learner will also confirm whether the learner is keeping pace with their plan of learning at work, and is meeting the competency progression points as part of their apprenticeship.

Learner attendance at scheduled learning opportunities, as well as monitoring periods of off- the-job training, is monitored through the use of an online Learner Management System.

ABOUT THIS DOCUMENT

Title: BSc (Hons) Data Science					
Approved by: Academic Board					
Version number	Date approved	Date published	Owner	Location	Proposed next review date
1.1	January 2021	January 2021	Scott Wildman	Academic Handbook/Programme specifications and Handbooks/Apprenticeship Programme Specification	June 2025
1.0	June 2020	June 2020	Scott Wildman	Academic Handbook > Programme Specifications and Handbooks	June 2025
Referenced documents	Recognition of Prior Learning and Credit Transfer Policy; AQF4 Programme and Course Approval and Modifications; AQF5 Annual Monitoring and Reporting				
External Reference Point(s)	Data Scientist (Integrated Degree) ST0585; Computing (October 2019); Mathematics, Statistics and Operational Research (October 2019); Education Skills and Funding Agency (ESFA) Funding Rules; Institute for Apprenticeships & Technical Education Assessment Plan; QAA (Quality Assurance Agency for Higher Education) Code of Practice for the Assurance of Academic Quality and Standards in Higher Education				

DISCLAIMER

NCH at Northeastern has checked the information provided in this Programme Specification and will aim to deliver this programme in keeping with this Programme Specification.

However, changes to the programme may sometimes be required arising from annual monitoring, student feedback, and the review and update of courses and programmes. Where this activity leads to significant changes to courses and programmes there will be prior consultation with students and others, wherever possible, and NCH at Northeastern will take all reasonable steps to minimise disruption to students. It is also possible that NCH at Northeastern may not be able to offer a course or programme for reasons outside of its control, for example, due to the absence of a member of staff or low student registration numbers. Where this is the case, NCH at Northeastern will aim to inform applicants and students as soon as possible, and where appropriate, will facilitate the transfer of affected students to another suitable programme.

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APPENDIX A – MAP TO QAA SUBJECT BENCHMARK

Threshold Standards	Learning Outcome
Demonstrate a requisite understanding of the main body of knowledge for their course of study.	K1-4 S1-4
Understand and apply essential concepts, principles and practices of the subject in the context of well-defined scenarios, showing judgement in the selection and application of tools and techniques.	K1-4 S1-4
Produce work involving problem identification, the analysis, design and Development of a system with accompanying documentation, recognising the important relationships between these stages and showing problem-solving and evaluation skills drawing on supporting evidence.	K1-4 B1
Produce small, well-constructed programmes to solve well-specified problems.	K1-4 S1-4
Demonstrate generic skills, an ability to work under guidance and as a team member.	B1-4
Identify appropriate practices within a professional, legal and ethical framework and understand the need for continuing professional development.	K1-4 S1-4 B4
A reasonable understanding of the basic body of knowledge for the course of study, normally including calculus and linear algebra.	K1-4 S1-4
A reasonable level of skill in calculation and manipulation within this basic body of knowledge and some capability to solve problems formulated within it.	K1-4 S1-4
Application of core concepts and principles in well-defined contexts, showing judgement in the selection and application of tools and techniques.	K1-4 S1-4
An understanding of logical arguments, identifying the assumptions made and the conclusions drawn.	K1-4
A familiarity with the notion of mathematical modelling and a reasonable level of skill in comprehending problems, formulating them mathematically and obtaining solutions by appropriate methods.	K1-4 S1-4
An ability to communicate straightforward arguments and conclusions reasonably accurately and clearly.	K1-4 B2, 3
Competent use of appropriate computer technology in mathematics.	K1-4 S1-4
The ability to manage their own learning and make use of appropriate resources.	K1-4 B1-4

* This is intended to mean that all learners (taken over all years) graduating with an honours degree in this discipline will have achieved this.

QAA benchmark statements can be found here and here.

APPENDIX B – MAP TO APPRENTICESHIP STANDARD

Course name:	BF	MSM	IFCSP1	DMS	DDM1	IFCSP2	CC	DSB	ITPM	DDM2	LAPDS	DA	MLDM1	MLDM2	DV	DS	ADS	BD	SE	IDS	SP+EPA
Core skills																					
1	X			X				X	X		X	X	X	X	X	X	X		X	X	X
2		X	X		X	X	X	X			X	X	X	X	X			X	X	X	X
3		X	X		X	X		X	X	X	X	X			X			X	X	X	X
4	X											X	X	X	X	X		X		X	X
5				X			X		X				X	X				X	X		X
6								X				X	X	X	X					X	X
7									X										X		X
8									X										X	X	X
Core knowledge																					
1				X	X		X	X	X									X		X	X
2	X			X			X	X	X						X			X		X	X
3				X	X		X	X		X		X	X	X	X	X	X	X		X	X
4		X	X			X			X		X		X	X		X			X	X	X
5					X			X		X		X	X	X		X	X	X			X
Core behaviours																					
1				X	X				X	X	X	X	X	X	X	X	X	X	X	X	X
2	X								X				X	X	X				X		X
3								X	X			X	X	X	X			X	X	X	X
4	X			X	X		X	X	X	X	X	X			X	X	X	X	X	X	X
5		X	X			X		X				X	X		X	X	X			X	X
6				X									X		X	X	X	X	X	X	X

APPENDIX C – EXIT AWARDS

CERTIFICATE IN HIGHER EDUCATION

In order for a learner to be awarded a Certificate in Higher Education (Cert HE), they are required to have achieved 120 Level 4 Credits, in accordance with the NCH and Northeastern's Academic Regulations for Taught Awards.

DIPLOMA IN HIGHER EDUCATION

In order for a learner to be awarded a Diploma in Higher Education (Dip HE), they are required to have achieved **120 Level 4 Credits and 120 Level 5 Credits**, in accordance with the NCH and Northeastern's Academic Regulations for Taught Awards.

APPENDIX D – PROGRAMME STRUCTURE AND SUMMATIVE ASSESSMENT SUMMARY

Code	Order	Course Title	Credit	Type	Mode	Assessment Weighting % & Activity Type (code overleaf)			
						AE1	Activity type	AE2	Activity type
Level 4									
NCHNAP443	1	Business Fundamentals	15	C	DL/WB	50%	A	50%	A
NCHNAP444	2	Mathematical Structures and Methods	15	C	DL/WB	60%	Set	40%	CBEx
NCHNAP445	3	Intensive Foundations of Computer Science and Programming I	15	C	DL/WB	50%	Set	50%	Pract
NCHNAP446	4	Data Management Systems	15	C	DL/WB	70%	A	30%	CBEx
NCHNAP447	4	Database Design and Management I	15	C	DL/WB	60%	Set	40%	R
NCHNAP448	4	Intensive Foundations of Computer Science and Programming II	15	C	DL/WB	50%	Set	50%	R
NCHNAP451	5	Cloud Computing	15	C	DL/WB	50%	Set	50%	R
NCHNAP452	6	Data Science Bootcamp	15	C	BK/BL	70%	P	30%	Oral
Level 5									
NCHNAP555	7	Information Technology Project Management	15	C	DL/WB	70%	A	30%	CBEx
NCHNAP556	7	Database Design and Management II	15	C	DL/WB	60%	Pract	40%	Set
NCHNAP562	8	Linear Algebra and Probability for Data Science	15	C	DL/WB	50%	Set	50%	Set
NCHNAP558	8	Data Analytics	15	C	DL/WB	60%	Pract	40%	A

Code	Order	Course Title	Credit	Type	Mode	Assessment Weighting % & Activity Type (code overleaf)			
						AE1	Activity type	AE2	Activity type
NCHNAP563	9	Machine Learning and Data Mining I	15	C	DL/WB	60%	A	40%	Set
NCHNAP564	9	Machine Learning and Data Mining II	15	C	DL/WB	60%	Pract	40%	A
NCHNAP557	10	Data Visualisation	15	C	DL/WB	70%	Pract	30%	A
NCHNAP565	11	Data Synthesis	15	C	BK/BL	70%	P	30%	Oral
Level 6									
NCHNAP693	12	Advances in Data Science	15	C	DL/WB	50%	A	50%	R
NCHNAP694	12	Big Data	15	C	DL/WB	60%	Set	40%	A
NCHNAP691	12	Implementing Data Science	15	C	DL/WB	70%	A	30%	Oral
NCHNAP688	12	Software Engineering	15	C	DL/WB	60%	R	40%	A
NCHNAP692	12	Data Science Synoptic Project and End Point Assessment	60	C	BL/DL/EX/WB	20%	Exam	50% 30%	Diss Oral

COURSE TYPE: C = Core; O = Option

COURSE MODE: CD = Campus Delivery; BK = Block Delivery; BL = Blended Learning; DL

= Distance Learning and Self-Directed Learning; EL = E-Learning; EX =
Experiential; PL = Placement; WB = Work Based Learning

ASSESSMENT WEIGHTING: AE1 = Assessment Element 1; AE2 = Assessment Element
2; AE3 = Assessment Element 3;

AE4 = Assessment Element 4

ASSESSMENT ACTIVITY TYPE	CODE
Written exam	Exam
Computer-based exam	CBEx
Written assignment	A
Report	R
Dissertation	Diss
Portfolio	F
Project output (other than dissertation)	P
Oral assessment and presentation	Oral
Practical skills assessment	Pract
Set exercise	