MSc Digital and Technology Specialist

About this course

Course overview

This programme is delivered in partnership by QA and Northumbria University with the degree awarded by Northumbria University.

For learners applying to begin their programme in January: QA has two primary objectives during this rapidly evolving period regarding Coronavirus (Covid-19). The first is to ensure the welfare of our learners and staff, and the second is to ensure continuity and access to learning. In line with the sector as a whole and its response to Covid-19, if necessary, we will implement online teaching for this programme to allow you to begin your programme this January.

Funded by Education & Skills Funding Agency

European Union
European Social Fund

PLEASE NOTE: To be eligible for one of our Degree Apprenticeship programmes, learners must:

(1) be **currently in full-time employment** and based in the UK

(2) be interested in completing a Degree Apprenticeship with their **current employer**

The MSc Digital and Technology Specialist programme is designed for those wishing to enhance their career through engaging in a work based learning programme and developing an understanding of Computing, IT and Digital Technology. You will choose a specialist pathway to follow in areas including:

- Software Engineering
- Data & Analytics
- Enterprise Architecture
- Cyber Security
- IT Ops Management (Cloud Computing)
- IT/Digital Futures (DevOps)

Each pathway will have a combination of research-led specialist modules, and professional practice modules where you will focus on demonstrating your understanding of applying contemporary research into your current practice.

Alongside developing your capabilities in the areas of the Computing, IT and Digital Technology subject discipline, the programme will also develop you as a digital leader. As such you will engage in a range of modules designed to develop your competences in areas such as Technical Leadership, Business & Technology.

How will I be taught?

As an apprentices, you are entitled to 20% of your working time off for studying. This will be agreed between your employer, you and us – we can advise how best to do this.

You will have 2 2-day block teaching workshops for each taught module, coupled with a 2 hour 1-2-1 coaching session every 8 weeks throughout the programme.

Our blended approach is highly work-based – you will spend 80% of your time in the programme on the job, actively applying what you've learned right away in the workplace.

You'll spend the other 20% in off-the-job learning, which includes classroom sessions, digital learning activities, and learning and development activities at your workplace outside your normal day-to-day working duties.

A range of coursework approaches will be used throughout the programme. This will include research informed

assignments for “core” and “principles” modules, negotiated, research informed work based projects for “Professional Practice” modules and Technical Projects for “specialist technica” modules.

Download Programme Handout

Careers

You will be equipped to work in a range of Computing, IT, and Digital Technology roles. Depending on your chosen specialist pathway, this will include those in the areas of Software Engineering, Data & Analytics, Enterprise Architecture, Cyber Security, IT Ops Management (Cloud Computing), or IT/Digital Futures (DevOps).

Modules

All modules are core and worth 20 credits unless otherwise stated.

Common Modules

Business and Technology

In this module, you will develop critical knowledge and skills in Innovation in Business and Technology. Typical topics covered in the module include; understanding the typology of innovation, how firms leverage internal and external resources to compete in the digital environment, and how to plan for innovation in your organisation. This module prepares students to think about innovation activities in the context of their IT specialism as well as the wider organisation and business ecosystem.

Technical and Digital Leadership

In this module, you will develop a critical knowledge and skills in Technical & Digital Leadership. Typical topics covered in the module include; understanding the art and science of leading engineering and technology organisations and how to leverage a combination of individual capabilities and technology management practices and tools to deliver business impact and performance. This module addresses a critical gap in the learning and career development of future leaders operating in complex technological environments.

Major Postgraduate Project (60 credits)

In this module you will engage in a major applied research project, which demonstrates your ability to:

- Undertake an extensive academic literature review
- Develop evaluative skills and research outcomes in Digital & Technology Solutions
- Apply them in your workplace context
- Critically analyse the implementation and recommend potential future improvements.

The module shall commence with a coverage of the research oriented skills required to undertake such a project, before the direction of the project is tailored towards your specific workplace requirements.

Software Engineering Pathway

Software Engineering Principles

In this module, you will develop critical knowledge and skills in Software Engineering. Typical topics covered include; software life cycle models, agile development, continuous integration and source control, organising development projects, object-oriented modelling and test driven development – all areas considered to be essential for a Software Engineering professional.

Software Engineering Professional Practice I

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- Identification of a relevant skills need and subsequent CPD programme, embedded into your module delivery
- Design and presentation of a Professional Practice Log using appropriate reflective framework
- Strategies to embed learning from your CPD into practice

Software Engineering Professional Practice II

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Building OO Applications (Optional)

In this module, you will develop knowledge and skills in Object Oriented (OO) Applications. Typical topics covered include; Analysing real-world software systems challenges and development of structured solutions, object oriented analysis and design methodologies, graphical object oriented software modelling and associated tools, key object oriented design concepts and features such as data abstraction, classes and class hierarchies (inheritance), polymorphism, encapsulation and implementing OO solutions in modern object oriented programming languages.

Professional Practice (Optional)

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Data and Analytics Pathway

Data and Analytics Principles

In this module, you will develop a critical knowledge and skills in Data Analytics. Typical topics covered in the module include; Scalable data management architectures, data-parallel problems in e-science, patterns and technology for exploiting cloud infrastructure on data-parallel problems, graph databases and their application to social media analysis, and scalable real-time data processing – all areas considered to be essential for a data analytics professional.

Data and Analytics Professional Practice I

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Strategies to embed learning from your CPD into practice

Data and Analytics Professional Practice II

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Databases (Optional)

In this module, you will develop a critical knowledge and skills in databases. Typical topics covered in the module include; Data modelling, database management, relational databases, relational database languages: relational algebra, transaction management and recovery, concurrency and normalisation – all areas considered to be essential for an IT professional.

Professional Practice (Optional)

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Cyber Security Pathway

Cyber Security Principles

In this module, you will develop critical knowledge and skills in Cyber Security. Typical topics covered in the module include; Developing appropriate security policies and network architectures to minimise the threats from network intrusion, producing strategies to minimise risks of security breaches in a range of network environments, analysing the shortcomings of a range of security strategies, techniques used to penetrate a Web application, assessing the different types of threat posed by different classes of hacker and by different categories of malware, applying the principles of key cryptography and message digests, providing appropriate access controls and authentication techniques at different levels.

Cyber Security Professional Practice I

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Cyber Security Professional Practice II

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Technical and Network Security (Optional)

In this module, you will develop critical knowledge and skills in Technical and Network Security. Typical topics covered in the module include; physical attacks, DNS, queries and resolvers, DNS poisoning, ARP, principles, spoofing and poisoning, network and port scanning, network packet factory, firewall and Intrusion Detection technologies, web security: server side (SQL, Xpath and code injections), web security: client side (Phishing, XSS), email security, anonymity and privacy (networks), public key infrastructures (networks) and denial of service.

Professional Practice (Optional)

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- Strategies to embed learning from your CPD into practice

Enterprise Architect Pathway

Enterprise Architecture Principles

In this module, you will develop a critical knowledge and skills in Enterprise Architecture. Typical topics covered in the module include; Business resilience and requirements: organisation-wide solutions identification and quality maintenance of agile systems development, Data architecture: the design and implementation of Solution architecture for database administration, Infrastructure: design and planning for hardware and infrastructure, considering flexibility and scalability, Risk assessment of IT systems: network, digital-assets infrastructure and information security plus Architecture implementation, change management and organisational governance.

Enterprise Architecture Professional Practice I

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Enterprise Architecture Professional Practice II

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Technical Architecture (Optional)

In this module, you will develop knowledge and skills in Technical Architecture. Typical topics covered in the module include; Typical technical architecture found in businesses, including:

- End user devices
- Operating Systems
- Applications
- Databases
- Servers

- Communications infrastructure
- Security
- Middleware

Low level technical architecture including:

- Pipelined CPU architecture, Caches: associativity, allocation and replacement policies, sub-block placement, Dependence in loop-based programs: dependence analysis, parallelisation, Implementations of shared memory and Graphics processors and “manycore” architecture.

Professional Practice (Optional)

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IT Ops Management (Cloud Computing) Pathway

Cloud Operations Principles

In this module, you will develop critical knowledge and skills in Ops Management (Cloud). Typical topics covered in the module include; An introduction to the Cloud and Cloud Computing; Virtualisation at both the Desktop and Server levels; Common cloud types which include SaaS, PaaS and IaaS; Benefits and disadvantages of cloud computing; Security considerations with respect to the Cloud; Managing resource consumption in the Cloud; Storage and archiving in the Cloud and Creating scalable deployments.

Cloud Operations Professional Practice I

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Cloud Operations Professional Practice II

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- Identification of a relevant skills need and subsequent CPD programme, embedded into your module delivery
- Design and presentation of a Professional Practice Log using appropriate reflective framework

Strategies to embed learning from your CPD into practice.

Linux, Networking & Scripting (Optional)

In this module, you will develop critical knowledge and skills in Linux, Networking & Scripting. Typical topics covered in the module include;

- What is UNIX? Origins and variants.
- Architecture and purpose, working with Linux/Unix main shell:
- BASH, navigating the file system and manage files and directories, understanding the client/server nature of X Window System and X applications, editing files using vi and GUI editors,
- Manipulating data with a selection of filter tools, using redirection and piping techniques, performing basic administrative tasks, controlling processes, file systems, job scheduling, and simple networking and backups and reading and writing simple BASH scripts
- Automating networking tasks using scripting tools and languages.

Professional Practice (Optional)

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- Strategies to embed learning from your CPD into practice

IT/Digital Futures (DevOps) Pathway

DevOps Principles

In this module, you will develop a critical knowledge and skills in DevOps. Typical topics covered in the module

include; Use of agile and other development processes and methodologies, How to reconcile demand for an increased rate of production releases from application and business unit stakeholders, Virtualised and cloud infrastructure from internal and external providers, alongside Data centre automation and configuration management tools – all areas considered to be essential for a DevOps professional.

DevOps Professional Practice I

A key element of your journey towards becoming a Digital and Technology Specialist is your ongoing skills development. This is the first of two core modules in which you shall engage in a recognised CPD programme relating to your specialist pathway and to reflect upon how such learning can be embedded back into the workplace. To enable this we will consider the following areas:

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DevOps Professional Practice II

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- Identification of a relevant skills need and subsequent CPD programme, embedded into your module delivery
- Design and presentation of a Professional Practice Log using appropriate reflective framework

Strategies to embed learning from your CPD into practice

Linux, Networking and Scripting (Optional)

In this module, you will develop critical knowledge and skills in Linux, Networking & Scripting. Typical topics covered in the module include;

- What is UNIX? Origins and variants.
- Architecture and purpose, working with Linux/Unix main shell:
- BASH, navigating the file system and manage files and directories, understanding the client/server nature of X Window System and X applications, editing files using vi and GUI editors,
- Manipulating data with a selection of filter tools, using redirection and piping techniques, performing basic administrative tasks, controlling processes, file systems, job scheduling, and simple networking and backups and reading and writing simple BASH scripts
- Automating networking tasks using scripting tools and languages.

Professional Practice (Optional)

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The course information published on this page is accurate for the academic year 2021/22 and every effort is taken to ensure it is kept up to date. We aim to run the course as advertised however, changes may be necessary due to updates to the curriculum (due to academic, industry or apprenticeship standard developments), learner demand or UK compliance reasons.

Learner Support

Skills Coach

Your Skills Coach will be your primary, non-academic contact, supporting you in the successful progression and completion of your apprenticeship. Your coach will support you in reviewing your progress and collecting evidence of your practice at work to integrate into your module assessments and final endpoint project/assessment. They are also a point of contact for queries, concerns, or general support.

Your Coach can help you with:

- Coaching and supporting work-based learning activities
- Reviewing your progress with your apprenticeship portfolio progress
- Help with achieving your EPA
- Advice and guidance on mitigating (extenuating) circumstances processes and potential breaks in learning.

Workplace Mentor

A Workplace Mentor will be appointed by your employer and typically would be someone you work with. Your workplace mentor will be familiar with the apprenticeship programme and its workplace requirements. They will facilitate the workplace learning opportunities to enable you to meet the requirements of the degree apprenticeship standard.

ACE Team

They are the Academic Community of Excellence (ACE) Team, and amongst the team, have many years of experience

providing academic guidance to students on subjects such as how to write in an academic style, how to read smarter rather than longer and how to reference accurately.

The ACE Team will provide you with support on academic matters outside of the classroom. You can also book 1-1 meetings (mainly online) with the ACE Team and get feedback on your academic style of writing, references and critical report writing.

How can the ACE Team support you?

1. "Welcome to the World of Academia" online workshops: if you wish to have an introduction to or a review of the different aspects of academic life before starting your programme, then please do join their online workshops (non-obligatory – but much to be gained from joining!).
2. One-to-one tutorials: you can book a virtual 30-minute tutorial to discuss your academic development skills, such as paraphrasing, referencing and academic writing.
3. Online workshops: we offer ongoing support workshops on a variety of academic subjects such as structuring an argument, academic style and criticality.
4. Our own-created range of learner materials: we have also developed a wide range of ACE Team created materials based on common questions and academic needs.

QA Welfare Services

Our Student Welfare Team is on hand to assist you throughout your studies. Some degree apprenticeship learners have additional learning needs which the Welfare Team can assist with, or they might help you with personal circumstances that are affecting your studies.

Entry requirements

- Honours degree (2:2 or above) in an appropriate Computing, Technology or Engineering discipline
- In order to attempt the EPA apprentices must have achieved GCSE Maths and English at Grade C – you may still enter the programme but will need to evidence Level 2 Maths and English qualification before starting the gateway and EPA

Non-standard entry

- Relevant qualifications and/or work experience will be taken into consideration where the applicant has the judged potential to benefit from the programme. Requests will be considered on an individual basis where appropriate.

Informal Interviews

Informal interviews will be held where

- The suitability of a candidate is in doubt and further evidence is sought.
- The candidate presents an unusual set of qualifications taken or pending, and an appropriate conditional offer needs to be determined.
- Candidates may need advice on the appropriateness of the programme.

Applicants invited for an informal interview will always be informed of its purpose.

End Point Assessment

You must be able to evidence level 2 English and Maths before you start your End Point Assessment. You may still be begin the programme without these but must obtain the qualifications in order to begin the EPA.

Fees & finance

There is no cost to you as a degree apprentice. Degree Apprenticeships are fully funded by the Apprenticeship Levy through your employer.

If you're an employer, the total funding for this programme is:

- £21,000

Travel expenses to travel to QA centres should be covered by the employer.

All textbooks are provided free of charge as e-books. Any students wishing to use paper copies will need to pay for these themselves, typically at an average cost of Ã‚Â£30 per book.

How to apply

If you are interested in applying to study or to offer a Degree Apprenticeship, please complete the enquiry form on this page and one of our account managers will be in touch.

In order to join a Degree Apprenticeship, the employer will either recruit new staff or select existing staff that are suitable for the programme.