Programme Title: Digital & Technology Solutions (Software Engineering) - 4 Year

Programme Specification (UG)

Awarding body / institution:	Queen Mary University of London
Teaching institution:	Queen Mary University of London
Name of award and field of study:	BSc Digital & Technology Solutions (Software Engineering)
Name of interim award(s):	N/A
Duration of study / period of registration:	4 Years Professional Pathway
QMUL programme code / UCAS code(s):	G4DE
QAA Benchmark Group:	Computing
FHEQ Level of Award :	Level 6
Programme accredited by:	TechSkills
Date Programme Specification approved:	
Responsible School / Institute:	Faculty of Science and Engineering

Schools / Institutes which will also be involved in teaching part of the programme:

School of Physical and Chemical Sciences

Collaborative institution(s) / organisation(s) involved in delivering the programme:

Programme outline

This programme has been developed under the auspices of the government's degree apprenticeship initiative. Degree apprenticeships are intended to capitalise on the strengths of both higher education and vocational education. The model is that the degree apprentice is employed in a substantive job role, while also pursuing a degree. This particular programme follows the Digital and Technology Solutions Professional (Level 6) Apprenticeship Standard - (see https://www.gov.uk/government/publications/apprenticeship-standard-digital-technology-solutions-professional).

The programme is delivered on a 4 year basis or a 3 year fast track depending on the choice of employer and against four occupational pathways Software Engineer, Data Analyst, Business Analyst & IT Consultant. The programme is delivered across three semesters throughout the full calendar year, culminating with End Point Assessment. Provided students meet the conditions of their assessment plan they will graduate with both a Bsc Hons Digital and Technology Solutions (Degree Apprenticeship) degree and an IFATE Apprenticeship Certificate.

Aims of the programme

The aims of our revised Digital and Technology Solutions Degree Apprenticeship centre around providing apprentices with the comprehensive knowledge, skills and behaviours they need to thrive in challenging occupational roles. This will involve

equipping apprentices with proficiency in software development, data analysis, cybersecurity, project management, and other relevant areas essential for contemporary digital industries. Additionally, the programme emphasises practical application through real-world projects and work placements, ensuring apprentices develop both technical expertise and professional competencies necessary for success in the digital and technology sector. Furthermore, the apprenticeship aims to foster critical thinking, problem-solving abilities, and adaptability to prepare apprentices for the evolving landscape of digital technologies and industries. Recruitment to the programme is explcitly overlaid with a Social Mobility motif and as such diversification of the digital and technology sector workforce is a key aim of the programme, particularly for underrepresented groups.

What will you be expected to achieve?

Apprentices are expected to achieve occupational competency against the following itemised Knowledge, Skill and Behaviour requirements of the DTSP standard - https://www.instituteforapprenticeships.org/apprenticeship-standards/digital-and-technology-solutions-professional-v1-2. This required successful completion of the degree component and the apprenticeship end point assessment.

Please note that the following information is only applicable to students who commenced their Level 4 studies in 2017/18, or 2018/19

In each year of undergraduate study, students are required to study modules to the value of at least 10 credits, which align to one or more of the following themes:

- networking
- multi- and inter-disciplinarity
- international perspectives
- enterprising perspectives.

These modules will be identified through the Module Directory, and / or by your School or Institute as your studies progress.

Academic Content:	
A1	Demonstrate comprehensive understanding of digital technology concepts, frameworks, and methodologies relevant to the industry
A2	Evaluate emerging technologies and assess their potential impact on digital solutions within diverse organizational contexts.
A3	Apply ethical principles and considerations in the design, development, and deployment of digital technology solutions.
A4	Proficiency in analyzing business and technical requirements to select appropriate technology solutions, design, implement, test, and debug software using contemporary methods like agile development.
A5	Competence in identifying organizational information requirements, modeling data solutions using conceptual data modeling techniques, implementing database solutions, managing data effectively, and conducting data analysis.
A6	Ability to critically analyze business domains to identify the role of information systems, evaluate issues, and propose improvements in alignment with intended purposes and effectiveness.

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Disciplinary Skills - able to:	
B 1	Apply advanced problem-solving skills to analyze complex digital technology challenges and propose innovative solutions.
B 2	Utilize programming languages, tools, and platforms proficiently to develop robust and scalable software applications.
B 3	Collaborate effectively within multidisciplinary teams to design, develop, and implement digital solutions that meet stakeholder requirements.
B 4	Demonstrate proficiency in agile project management methodologies and tools to deliver digital projects on time and within budget.
B 5	Communicate complex technical concepts and solutions clearly and persuasively to both technical and non-technical stakeholders.

Attributes:	
C 1	Continuously engage in professional development activities to stay abreast of industry trends, best practices, and evolving technologies.
C 2	Demonstrate cultural competence and sensitivity when working in diverse and globalized digital technology environments.
C 3	Embrace a growth mindset, actively seeking and incorporating feedback to enhance personal and professional development.
C 4	Exhibit a commitment to professional integrity and ethical behavior in all aspects of digital technology work.
C 5	Cultivate strong interpersonal and teamwork skills, fostering a collaborative and inclusive work environment.
C 6	Demonstrate effective time management and organizational skills to prioritize tasks and meet project deadlines efficiently.
C 7	Foster a proactive and innovative mindset, seeking opportunities for continuous improvement and optimization in digital technology solutions.

How will you learn?

The programme contains a mixture of campus-based and work-based modules. Degree apprentices will study their campus-based modules alongside degree apprentices from other employers and students from related campus-based programmes.

Learning materials will be hosted on Queen Mary's tailored virtual learning environment, QMPlus. This will also provide access to announcement and discussion forums used for asynchronous support. The overall profile of teaching and learning strategies is designed to foster the development of (i) Graduate Attributes, as captured in Queen Mary's Statement of Graduate Attributes and (ii) key skills, as captured in the Tech Partnership endorsement criteria. In the Digital Technology Solutions Professional apprenticeship, participants not only acquire advanced technical skills but also cultivate British values such as integrity and teamwork, fostering a well-rounded professional ethos essential for success in today's digital landscape. Queen Mary University of London degree apprenticeships prepare learners for work and life in modern Britain though value-led educational approach. Our commitment to Excellence in Education includes supporting our students to contribute actively to society: https://www.qmul.ac.uk/queenmaryacademy/educators/resources/degree-apprenticeships/embedding-british-values/

Our vision for the DTS programmes is informed by our educational approach Active Curriculum for Excellence (ACE):
• Student-paced learning activities - We understand Off-The-Job time is precious. Our DTS programme is designed to fit around existing occupational commitments with asynchronous self-directed learning accessible on-demand.

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• Interactive large group sessions – We equally appreciate that for undergraduate learners in particular, regular synchronous sessions are important to maintain momentum and build a sense of community on-programme. Each week we would hold synchronous sessions for modules across a single day.
• Learning by doing sessions – We are keen to adopt modes of assessment that don't simply test apprentices' ability to recite information but instead replicate key occupational duties/tasks that will be dispensed within the workplace i.e. code & data audits.
• Small active learning groups – We understand that for many apprentices, this apprenticeship may be their first role in employment. We will encourage apprentices to develop teamworking skills and broader workplace behaviours through group-based formative and summative assessment exercises.
• Co-curricular activity – Whilst we know Degree Apprenticeships are intensive modes of study and work, we want Amazon apprentices to build cross-curricula networks with our full-time students whether that be through students' union societies, volunteering or QMUL sports clubs.

How will you be assessed?

Apprentices will be assessed through a combination of methods designed to evaluate both theoretical understanding and practical application of digital and technology concepts. Assessment methods will include:

Examinations: Apprentices will sit a limited number of examinations to assess their understanding of theoretical concepts, principles, and frameworks relevant to digital and technology solutions.

Coursework Assignments: Apprentices will complete coursework assignments such as essays, reports, or presentations that demonstrate their ability to apply theoretical knowledge to real-world scenarios and problems.

Practical Projects: Apprentices will undertake practical projects individually and in groups, allowing them to apply their skills to solve complex problems, develop digital solutions, or implement technology projects.

Work-Based Assessments: Apprentices' performance in the workplace will be assessed through observation, feedback from supervisors or mentors, and reflective journals, evaluating their ability to apply learned concepts and skills to real work situations.

Professional Portfolio: Apprentices will compile a professional portfolio showcasing their achievements, projects, and reflections throughout the apprenticeship, providing evidence of their development and competence in digital and technology solutions.

End-Point Assessment (EPA): Towards the end of the apprenticeship, apprentices wil undergo an End-Point Assessment conducted by an independent assessor. This assessment evaluates the apprentice's overall knowledge, skills, and behaviors acquired during the apprenticeship against the apprenticeship standard.

How is the programme structured?

Please specify the structure of the programme diets for all variants of the programme (e.g. full-time, part-time - if applicable). The description should be sufficiently detailed to fully define the structure of the diet.

The revised digital and technology solutions programme is centred around four module families (Common Technical, Pathway Technical, Organisational Project & Reflective Practice):

Common Technical - These modules form the backbone of the apprenticeship's technical curriculum and cover fundamental concepts and skills that are crucial for understanding and succeeding in their role as technologists. The Core KSB's from the standard are covered by these modules.

Pathway Specific - These modules are directly tailored towards the requirements of a particular occupational pathway. They emphasize the practical application of technical knowledge within a specific professional context. The pathway specific KSB's are covered by these modules.

Organisational Project - These modules involve practical, real-world projects focused on organisational objectives. They emphasise the hands-on nature of the projects and their direct relevance to organisational settings. These modules will

specifically address the Skill & Behaviour components of the Standard.

Reflective Practice - Through these modules, apprentices will engage in activities and tasks that directly apply their theoretical knowledge to real-world situations in their workplace. These modules will specifically address the Skill & Behaviour components of the Standard.

The programme can be studied as a three year (fast-track) or four year (part-time) degree with 120 credits in years 1 & 2 and then the option of a final third 120 credit year of years 3 and 4 with 60 credits each. Each pathway has 30 credits of specific content in each academic year. This provides sufficient scope to cover the pathway specific Knowledge, Skills and Behaviours.

Academic Year of Study FT - Year 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Fundamentals of Programming	IOT451U	30	4	Compulsory	1	Semester 1
Reflective Practice for Technology Professionals	IOT450W	30	4	Compulsory	1	Semester 3
Quality Driven Development	IOT453U	30	4	Compulsory	1	Semesters 1 & 2
Software Engineering Tools, Techniques and Practices	IOT452U	30	4	Compulsory	1	Semester 2

Academic Year of Study FT - Year 2

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Next Generation Technology Design: Network, Security and Green Computing	IOT555U	30	5	Compulsory	2	Semester 1
Business Organisation and Decision Making	IOT552U	30	5	Compulsory	2	Semesters 1 & 2
Extended Reflective Practice for Technology Professionals	IOT591U	30	5	Compulsory	2	Semester 3
Software Development Methods and Quality Assurance in Software Industry	IOT554U	30	5	Compulsory	2	Semester 2

Academic Year of Study PT - Year 3

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Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Strategic Digital Leadership: Mastering Projects, Programmes, and Products	IOT653U	30	6	Compulsory	3	Semester 1
Advanced Topics and Emerging Trends in Software Engineering	IOT651U	30	6	Compulsory	3	Semester 2
Final Year Project Fundamentals	IOT654U	0	6	Compulsory	3	Semesters 2 & 3

Academic Year of Study PT - Year 4

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Final Year Project	IOT635W	30	6	Core	4	Semesters 1 & 2
End Point Assessment	IOT656U	30	6	Core	4	Semester 3
DTSP EPA Gateway	IOT655U	0	6	Core	4	Semester 2

What are the entry requirements?

Grades AAB at A-Level. Alternatively, A-Level grades ABB including either A-Level Mathematics or Computer Science. Excludes General Studies and Critical Thinking.

Full entry requirements (including contextual admissions): https://www.qmul.ac.uk/undergraduate/apply/entry/contextualised-admissions/

How will the quality of the programme be managed and enhanced? How do we listen to and act on your feedback?

Managing and enhancing the quality of our revised Digital and Technology Solutions Professional degree apprenticeship involves several strategies aimed at both continuous improvement and responsiveness to student/ employer feedback:

Quality Assurance Processes: QMUL has recently mapped and mobilised an enhanced set of quality assurance processes to monitor and maintain the quality of our apprenticeship programmes. This involves regular reviews of curriculum content, assessment methods, and teaching practices to ensure alignment with industry standards and academic benchmarks.

Industry Engagement: QMUL engages with our industry partners and employers to gather feedback on the relevance and effectiveness of the apprenticeship programme in meeting their specific labour market needs. This feedback has informed the development of our proposed curriculum and will inform subsequent curriculum updates, the incorporation of emerging technologies, and adjustments to skills development initiatives.

Student Feedback Mechanisms: We provide various channels for apprentices to provide feedback on their learning experiences.

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This includes surveys, student staff liaison committee meetings, meetings with programme coordinators and academic advisors. Gathering feedback directly from students allows us to understand learner perspectives, concerns, and suggestions for improvement.

Continuous Monitoring and Evaluation: The DTSP programme team will continuously monitor the effectiveness of implemented changes and evaluate their impact on the quality of the apprenticeship programme. This ongoing evaluation process allows the team to identify areas of success and areas requiring further improvement, enabling iterative enhancements to the programme over time.

What academic support is available?

On our new Digital and Technology Solutions degree apprenticeship, academic support will be comprehensive and tailored to the unique needs of apprentices. This support include access to dedicated academic advisors and tri-partite skills coaches who act as mentors providing guidance on academic matters, career planning, and personal development. Additionally, apprentices have access to the full suite of tutoring services, study resources, and academic workshops that full-time equivalent students can access through the Library and Student Advice and Counseeling. As a mixed-mode programme with online content on QMPlus we will offer discussion forums, and collaborative spaces where apprentices can engage with peers and faculty members to seek assistance, share insights, and foster a supportive learning community.

How inclusive is the programme for all students, including those with disabilities?

We are committed to providing an inclusive learning environment for all students, including those with disabilities. We will offer a range of support services and accommodations to ensure equal access to education and participation in the programme. This includes accessible facilities at the London City Institute of Technology and learning resources, assistive technologies, alternative formats for course materials, and adjustments to teaching methods and assessment procedures as needed. Additionally, central QMUL disability support provision (DDS - Disability and Dyslexia Service) will be highlighted to learners and through induction and initial assessment we will work closely with students to identify their individual needs and develop personalised support plans.

Programme-specific rules and facts

Successful passing of all Core modules and End Point Assessment is a requirement for award of the Degree qualification.

Links with employers, placement opportunities and transferable skills

From its inception, the DTSP curriculum has been designed in close consultation with industry partners, leveraging their insights into the evolving needs and expectations of the workforce. By actively involving employers in curriculum development workshops, advisory boards, and regular town-hall feedback sessions, the programme will ensure alignment with industry standards and best practices.

Employers have, and will continue to play a pivotal role not only in shaping the curriculum but also in providing invaluable real-world contexts for skill development. Each apprentice on the programme will be sponsored by an employer partner. The apprentice will spend 80% of their time working with this employer, applying the key knowledge, skills and behaviours from their programme to their specific occupational role. These experiences not only expose apprentices to diverse technical challenges but also immerse them in professional environments where they can observe and practice transferable skills firsthand.

Employer-led workshops, seminars, and guest lectures offer apprentices insights into industry-specific practices, professional etiquette, and career pathways. By bringing industry experts into the classroom, the DTSP programme bridges the gap between theoretical learning and practical application, contextualising transferable skills within the workplace.

The programme and its assessments have been designed in such a way that theories and concepts taught within a university

context can be applied to different organisations. Examinations are therefore only adopted as a means of assessment where particular knowledge requirements of the Standard require it, with preference for work-based practice/ project work.

Programme Specification Approval

Person completing Programme Specification:	Jamie Hilder / Miriam Lowe
Person responsible for management of programme:	Dr Eranjan Padumadasa, DTSP Programme Director
Date Programme Specification produced / amended by School / Institute Education Committee:	13th March 2024
Date Programme Specification approved by Taught Programmes Board:	