



**Institute for Apprenticeships
& Technical Education**

Higher technical qualification submission form

Awarding body information

Awarding body information

What is the name of the awarding body?

New College Durham

Is the awarding body a higher education provider?

Yes

Is the awarding body on the Office for Students register?

Yes

Qualification information

Qualification information

You can only submit one qualification for each form. If you are submitting multiple qualifications you must start a new form for each qualification. Please include the name of the qualification as it appears on Ofqual register or UCAS. Include the size of the qualification. e.g. award, certificate, diploma

What is the name of the qualification?

FdSc Software Development

Is the qualification on the Ofqual register?

No

If the qualification is not regulated by Ofqual, the organisation owning the qualification must be OfS regulated. This is typically the case of qualifications from Higher Education Providers. For organisations which are Ofqual regulated, the specific qualification must be on the Ofqual register for the application to be progressed. The form will not prevent continuing if this is not completed, but your application cannot be progressed by the approval managers following submission if the awarding organisation is regulated by Ofqual but the qualification is not.

What is the level of the qualification?

Level 5

Route and occupational standards

Route and occupational standards

Awarding bodies must demonstrate that a qualification will enable a person to demonstrate that they have attained as many of the knowledge, skills and behaviours set out in the standard as may be reasonably

expected by undertaking a course of education.

Please note:

- Qualifications will only be considered for approval against occupational standards approved by the Institute.

If qualifications have optional units or pathways, we will only approve qualifications where every possible combination of units/ pathways ensures that a learner achieves competence in at least one occupation for which there is a standard. Qualifications with optional units that do not ensure this should be redesigned or remove optional units that do not align to occupations.

Awarding bodies must fill out all sections of this form. They must also submit supporting documentation to provide evidence of the following:

- The content of the qualification (for example, the specification of content)
- Evidence of employer engagement in the development and validation of the qualification (for example this could be within the qualification design and validation documentation that was used through the development of the qualification which evidences where and how employers were involved)

Which route does the qualification fall under?

Digital

Which occupational standards are aligned to the qualification?

Software developer/Level: 4

Attach documents

Please attach the following documents:

- The content of the qualification (for example, the specification of content)
- Evidence of employer engagement in the development and validation of the qualification (for example this could be within the qualification design and validation documentation that was used through the development of the qualification which evidences where and how employers were involved)

Software developer

Software developer

Knowledge, skills and behaviours coverage within the qualification

Please identify which knowledge, skill and behaviour statements from the occupational standard are covered within the qualification.

Where knowledge, skill and behaviour statements are covered, please provide a reference to the qualification content. This should be a unit or module reference along with associated page/paragraph/line numbers (as appropriate) in the attached specification. Please be as specific as possible which content in the qualification aligns to the statement in the standard.

Where knowledge, skill or behaviour statements are partially covered or not covered, you will be asked to provide a rationale for the exclusion of this content from the qualification. The employer engagement evidence provided should support this rationale.

The following questions assess how knowledge, skill and behaviour statements from the occupational standards are covered within the qualification.

This page has automatically generated an item for each knowledge, skill and behaviour statement (KSB) contained within the chosen standard. So please do not remove or add any further KSBs, as it requires the exact number.

KSBgenerator

KSB

KSB 1

K1 All stages of the software development life cycle (what each stage contains, including the inputs and outputs).

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Software Development Methods page 110-112 Validation Document

KSB 2

K2 Roles and responsibilities within the software development lifecycle (who is responsible for what).

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Software Development Methods page 110-112 Validation Document

KSB 3

K3 The roles and responsibilities of the project life cycle within your organisation, and your role.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Work Related Learning 2 (Risk Assessment) page 94-96 Validation Document

KSB 4

K4 How best to communicate using the different communication methods and how to adapt appropriately to different audiences.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Personal and Professional Development 1 page 60-62 Validation Document, UX Design & Web Development page 78-80 and Advanced Web Development page 98-100 Validation Document, Software Development Methods page 110-112 Validation Document

KSB 5

K5 The similarities and differences between different software development methodologies, such as agile and waterfall.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Software Development Methods page 110-112 Validation Document

KSB 6

K6 How teams work effectively to produce software and how to contribute appropriately.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Innovation, Idea Generation and Enterprise page 90-92 Validation Document, Software Development Methods page 110-112 Validation Document

KSB 7

K7 Software design approaches and patterns, to identify reusable solutions to commonly occurring problems.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Database Design and Development page 74-76, UX Design & Web Development page 78-80 and Advanced Web Development page 98-100 Validation Document, Software Development Methods page

KSB 8

K8 Organisational policies and procedures relating to the tasks being undertaken, and when to follow them. For example, the storage and treatment of GDPR sensitive data.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Work Related Learning 1 (Legislation, regulations and ethical standards) page 65-67 Validation Document

KSB 9

K9 Principles of algorithms, logic and data structures relevant to software development for example: arrays, stacks, queues, linked lists, trees, graphs, hash tables, sorting algorithms, searching algorithms, critical sections and race conditions.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document

KSB 10

K10 Principles and uses of relational and non-relational databases

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Database Design & Development page 74-76 Validation Document, Advanced Database Concepts page 3-5 Modification Document

KSB 11

K11 Software designs and functional/technical specifications

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Database Design & Development page 74-76 Validation Document, UX Design & Development page 78-80 Validation Document, Advanced Web Development page 98-100 Validation Document

KSB 12

K12 Software testing frameworks and methodologies

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Database Design & Development page 74-76 Validation Document, Object Oriented Programming page 82-84 Validation Document, Mobile Application Development page 106-108 Validation Document

KSB 13

S1 Create logical and maintainable codes.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Database Design & Development page 74-76 Validation Document, Object Oriented Programming page 82-84 Validation Document, Mobile Application Development page 106-108 Validation Document

KSB 14

S2 Develop effective user interfaces.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

UX Design & Development page 78-80 Validation Document, Advanced Database Concepts page 3-5 Modification Document

KSB 15

S3 Link code to data sets.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document, Database Design and Development page 74-76 Validation Document, Advanced Database Concepts page 3-5 Modification Document

KSB 16

S4 Test code and analyse results to correct errors found using unit testing.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document, Mobile Application Development page 106-108 Validation Document

KSB 17

S5 Conduct a range of test types, such as Integration, System, User Acceptance, Non-Functional, Performance and Security testing.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document, Work Related Learning 2 (Risk Assessment) page 94-96 Validation Document software developer apprentices will provide evidence of S5 for assessment in this module

KSB 18

S6 Identify and create test scenarios.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Database Design and Development page 74-76, UX Design & Web Development page 78-80, Object Oriented Programming page 82-84, Mobile Application Development page 106-108 Validation Document

KSB 19

S7 Apply structured techniques to problem solving, can debug code and can understand the structure of programmes to identify and resolve issues.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document, Object Oriented Programming page 82-84 Validation Document

KSB 20

S8 Create simple software designs to effectively communicate understanding of the program.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

UX Design & Web Development page 78-80 Validation Document, Object Oriented Programming page 82-84 Validation Document, Mobile Application Development page 106-108 Validation Document

KSB 21

S9 Create analysis artefacts, such as use cases and/or user stories.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Work Related Learning 2 (Risk Assessment) page 94-96 Validation Document, Software Development Methods page 110-112 Validation Document

KSB 22

S10 Build, manage and deploy code into the relevant environment.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document, UX Design & Web Development page 78-80 Validation Document, Object Oriented Programming page 82-84 Validation Document, Mobile Application Development page 106-108 Validation Document

KSB 23

S11 Apply an appropriate software development approach according to the relevant paradigm (for example object oriented, event driven or procedural).

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document, UX Design & Web Development page 78-80 Validation Document, Object Oriented Programming page 82-84 Validation Document, Mobile Application Development page 106-108 Validation Document

KSB 24

S12 Follow software designs and functional/technical specifications.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document, UX Design & Web Development page 78-80 Validation Document, Object Oriented Programming page 82-84 Validation Document, Mobile Application Development page 106-108 Validation Document

KSB 25

S13 Follow testing frameworks and methodologies.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document, UX Design & Web Development page 78-80 Validation Document, Object Oriented Programming page 82-84 Validation Document, Mobile Application Development page 106-108 Validation Document

KSB 26

S14 Follow company, team or client approaches to continuous integration, version and source control.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document, Work Related Learning 2 (Risk Assessment) page 94-96 Validation Document

KSB 27

S15 Communicate software solutions and ideas to technical and non-technical stakeholders.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

UX Design & Web Development page 78-80, Innovation, Idea Generation and Enterprise page 90-92, Work Related Learning 2 (Risk Assessment) page 94-96 and Advanced Web Development page 98-100 Validation Document

KSB 28

S16 Apply algorithms, logic and data structures.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Principles of Programming page 70-72 Validation Document

KSB 29

S17 Interpret and implement a given design whilst remaining compliant with security and maintainability requirements.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Work Related Learning 1 (Legislation, regulations and ethical standards) page 65-67, Principles of Programming page 70-72, Personal and Professional Development 2 (Security Case Development) page 86-88 Validation Document

KSB 30

B1 Works independently and takes responsibility. For example, has a disciplined and responsible approach to risk, and stays motivated and committed when facing challenges.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Personal and Professional Development 1 page 60-62, Work Related Learning 2 (Risk Assessment) page 94-96 and all modules Validation Document

KSB 31

B2 Applies logical thinking. For example, uses clear and valid reasoning when making decisions related to undertaking work instructions.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Personal and Professional Development 1 page 60-62 and all modules Validation Document

KSB 32

B3 Maintains a productive, professional and secure working environment.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Personal and Professional Development 1 page 60-62 and all modules Validation Document

KSB 33

B4 Works collaboratively with a wide range of people in different roles, internally and externally, with a positive attitude to inclusion & diversity.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Work Related Learning 2 (Risk Assessment) page 94-96 Validation Document

KSB 34

B5 Acts with integrity with respect to ethical, legal and regulatory ensuring the protection of personal data, safety and security.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Work Related Learning 1 (Legislation, regulations and ethical standards) page 65-67 and all modules Validation Document

KSB 35

B6 Shows initiative for solving problems within their own remit, being resourceful when faced with a problem to solve.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Work Related Learning 2 (Risk Assessment) page 94-96 Validation Document

KSB 36

B7 Communicates effectively in a variety of situations to both a technical and nontechnical audience.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Personal and Professional Development 1 page 60-62, Work Related Learning 2 (Risk Assessment) page 94-96 and all modules Validation Document

KSB 37

B8 Shows curiosity to the business context in which the solution will be used, displaying an inquisitive approach to solving the problem. This includes the curiosity to explore new opportunities, and techniques; the tenacity to improve methods and maximise performance of the solution; and creativity in their approach to solutions.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Work Related Learning 2 (Risk Assessment) page 94-96 and all modules Validation Document

KSB 38

B9 Demonstrates creativity and tenacity in their approach to solutions and the methods used to come to a solution for example, sees the task through to the end by devising new solutions and despite obstacles and problems along the way.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Personal and Professional Development 1 page 60-62, Work Related Learning 2 (Risk Assessment) page 94-96 and all modules Validation Document

KSB 39

B10 Committed to continued professional development.

Is the statement covered within the qualification?

Fully covered

Where within the qualification is the statement covered?

Personal and Professional Development 1 page 60-62, Work Related Learning 2 (Risk Assessment) page 94-96 and all modules Validation Document

Additional occupationally relevant content

Additional occupationally relevant content

Item 1

As well as the content aligned to the knowledge, skills and behaviours in the occupational standard, the qualification can include additional occupationally relevant content which is deemed of value to employers. Awarding bodies are asked to justify any content that does not directly align to the occupational standard, using evidence from employers.

Content should be identified at a unit or modular level and each item should be added separately by using the Add Item button. If the qualification does not include any additional content, please leave this section blank.

Unit or module containing additional content

Work Related Learning 2 (Risk Assessment)

Please give a short description of the additional content

This module includes opportunities for apprentices to demonstrate a comprehensive range of knowledge, skills and behaviours specific to their job role

Where within the qualification is the additional content covered?

page 94-96 Validation Document

Please provide an explanation of how the content is relevant to the occupation, including evidence from employers that supports its inclusion in the qualification.

This module includes opportunities for apprentices to demonstrate a comprehensive range of knowledge, skills and behaviours as detailed in the standard and specific to the employer business needs by contributing to the completion of a project

Item 2

As well as the content aligned to the knowledge, skills and behaviours in the occupational standard, the qualification can include additional occupationally relevant content which is deemed of value to employers. Awarding bodies are asked to justify any content that does not directly align to the occupational standard, using evidence from employers.

Content should be identified at a unit or modular level and each item should be added separately by using the Add Item button. If the qualification does not include any additional content, please leave this section blank.

Unit or module containing additional content

Personal and Professional Development 1

Please give a short description of the additional content

This module includes opportunities for apprentices to demonstrate a comprehensive range of knowledge, skills and behaviours specific to their job role

Where within the qualification is the additional content covered?

Page 60-62 Validation Document

Please provide an explanation of how the content is relevant to the occupation, including evidence from employers that supports its inclusion in the qualification.

Apprentices will identify any KSBs not specifically included in modules and undertake independent learning to develop competence in these areas ready for assessment.

Assessment methods

Assessment methods

Please confirm that the assessment covers all of the content relevant to the knowledge, skills and behaviours in the occupational standard.

Yes

Please outline the methods used to assess the content and provide a rationale for why these methods are valid for the qualification.

Personal Professional Development 1: Assessed by a Personal Development Project enables apprentices to identify personal KSB gaps, source appropriate CPD and engage in Independent Learning demonstrating effective implementation of a personal development plan and ensuring an ability to show current and future employers the ability to independently learn and apply new knowledge and skills as required in the computing sector

Work Related Learning 1 (Legislation, regulations and ethical standards): Assessed with a Research Project ensuring the ability to maintain currency in legislation, regulations and ethical standards which is appropriate as standards and regulations change and apprentices must be able to keep up to date. Also assessed with an Interview/presentation to ensure apprentices are able to relate the key concepts and benefits appropriate to their job role, the apprenticeship standard and ISO standards

Business Information Systems: Assessed with a report and presentation which is appropriate to develop professional written and verbal communication skills as well as the learning outcomes associated in this module.

Database Design & Development: Assessed with development of appropriate design documents, report and product which appropriately enables apprentices to applying appropriate analysis of a problem and design a solution with associated design documents, build and test documents, the product and an evaluative report. The assessment is contextualised to the apprenticeship standard and apprentice job role where appropriate.

UX Design & Development: Assessment mirrors the development lifecycle in industry and is contextualised to the apprenticeship standard and apprentice job role. The problem is analysed and client and user requirements considered in the development of design documents which are pitched via a presentation, upon approval the product (website) is developed including testing and refinement and a report evaluating and justifying the design and implementation is produced.

Object Oriented Programming: Assessed through the development of appropriate Design Documents for a solution to a given problem and the developed programme with fully documented code.

Personal Professional Development 2 (Security Case Development): Apprentices will submit a Security Case Project and deliver a Presentation to demonstrate all of the learning outcomes which are contextualised to their job role and apprenticeship standard.

Work Related Learning 2 (Risk Assessment): Assessed by Report, Product and Interview/Presentation covering all of the module outcomes and ensuring the flexibility to contextualise the assessment against the apprentice job role and the standard. Apprentices will engage in a project in their workplace approved by the module tutor and apprentice skills coordinator to provide the evidence for this module.

Advanced Web Development: working with a live client, the apprentice will design a prototype website with backend database and will be assessed by a presentation in which they propose a solution with prototype design documents and then after development and testing, present the product incorporating an appropriate range of web services and justifying all decisions.

Advanced Database Concepts: Assessed by report, product and time constrained assessment which is appropriate to demonstrate sufficient competence in relational databases.

Mobile Application Development: Assessed by report to establish a level of understanding of how data is presented using a range of tools and technologies and then by design, application and report for the remaining learning outcomes.

Software Development Methods: This module is assessed by presentation to ensure apprentices understand how to effectively implement an appropriate systems development methodology for a given business scenario justifying not only the chosen method, but also why others were eliminated from consideration.

The range of assessment methods are appropriate to the modules and have been developed to prepare apprentices to become work ready and allow for contextualisation to the apprentice's job role and their apprenticeship standard where appropriate. The vast majority of learning is made up of hands on practical activities to allow students to develop confidence in transferable skills and formative assessment is ongoing and individual throughout. All modules are developed to enable contextualisation to ensure apprentices are able to be assessed for all of the KSBs detailed in the standard.

Employer engagement

Employer engagement

Please describe how employers and industry practitioners were consulted throughout the development of the qualification, including:

- the process of identifying and recruiting relevant employers
- how employers were involved in the development, review and validation of the qualification materials.

Please describe how employers and industry practitioners were consulted throughout the development of the qualification.

All Foundation Degrees are designed in collaboration with employers from the computing & digital sector with an interest in the specific course knowledge skills and behaviours. Additionally, it is an essential requirement of validation that an employer with expertise in the subject as well as a subject specialist academic is a member of the validation panel.

Focus Groups

All foundation degrees in computing have been mapped to the associated standard and so already have a significant employer contribution. When designing a Foundation Degree, a focus group is established to encourage employers to consider the knowledge skills and behaviours they value from students who achieve.

Discussions among the employers help to ensure that in addition to relevant and valid modules, learning

outcomes are sufficiently clear to ensure the standards are met and sufficiently vague to allow the content within the modules to be contextualised to a higher apprentice job role. This ensures that the higher apprentice has the opportunity to cover the knowledge, skills and behaviours required by the standard between the foundation degree and work based learning.

In developing the FdSc Software Development Foundation Degree, employers from the following organisations contributed to the design in preparation for validation and/or have provided positive support throughout delivery of the course:

- Leighton Group
- British Airways
- Opta
- NVIDIA
- British Telecom
- Fujitsu
- Durham County Council
- Waterstons
- Nissan

The Validation of all Foundation Degrees at New College Durham requires that all validation documents are scrutinised by an employer from the associated sector and an academic who specialises in the subject. Both the employer and the academic sit on the Validation Panel and interrogate the curriculum team regarding subject content, assessment methods, employer engagement activities, relevance to apprenticeship standards where appropriate and academic standards in relation to the UK Quality Code and QAA. Validation is only approved when the panel is fully satisfied that the Foundation Degree content, assessment methods, occupational relevance and academic standards are assured.

Please refer to:

- Stage 2, item (ii), page 2
 - Stage 1, paragraph 2, page 5
 - Questions for the panel to consider, item (iv) page 6
 - Stage 2, paragraphs 2 and 3, page 7
 - Documentation required Notes, item (ii) page 9
 - Stage 4, paragraph 2 page 13
- of the attached Validation Process Document