Grading

Please see the Grading Pack for this qualification for more information on grading.

Learners who pass NextGen: HN Qualifications receive one of the following grade outcomes for the qualification as a whole:

- Achieved with Distinction
- Achieved with Merit
- Achieved

You assess and judge each learner's performance across the key competences of the qualification to determine their whole-qualification grade. You must align judgements with the whole-qualification grade descriptors, which are:

Achieved with Distinction

This candidate consistently demonstrates outstanding knowledge, understanding and application of skills. Thinking and working independently to an exceptional standard, they apply excellent judgement and creative problem-solving skills. They achieve or exceed agreed aims by confidently applying an extensive range of meta-skills and working very effectively with colleagues and peers.

Achieved with Merit

This candidate demonstrates an excellent level of knowledge, understanding and application of skills. Thinking and working independently to a high standard, they demonstrate good judgement and effective problem-solving skills. They achieve agreed aims by applying a broad range of meta-skills and working effectively with colleagues and peers.

Achieved

This candidate demonstrates thorough knowledge, understanding and application of skills. They think and work independently and use their judgement to find solutions to problems. They achieve agreed aims by applying a range of meta-skills and working well with colleagues and peers.

Successful learners receive their grade, along with the grade descriptor text, on their commemorative certificate.

In addition, you assess individual units on a pass or fail basis. Each unit has evidence requirements that learners must achieve before you can consider them for whole-qualification grading.

You make judgements about learners' quality of assessment evidence using a grading matrix based on important criteria in the qualification.

Grading and meta-skills

Meta-skills are a key part of the NextGen: HN Qualifications and learners develop them throughout the qualification. Competence in individual meta-skills is not assessed or graded. For example, the qualification does not judge the quality of learners' feeling or creativity, or their specific progress in any given meta-skill. Rather, it is the process of development the learner goes through that contributes to the whole-qualification judgement. This means learners should provide evidence of planning, developing and reflecting on their meta-skills. The grading matrix includes criteria on meta-skills, which you should use to support this judgement. See the NextGen: HN Meta-skills, Outcome and Assessment Guidance document for support with assessing meta-skills development.

How the qualification meets employer needs

This qualification is designed in collaboration with employers to meet the sector need. The following tables show how the qualification can benefit employers by producing learners with the necessary skill set.

The first table shows how units map to the aims of the qualification. The second table shows how the units map to National Occupational Standards (NOS) and/or trade or professional body for IT Professionals. The third table shows the significant opportunities that the qualification provides for learners to develop more generic skills and meta-skills. The final table shows the assessment strategy for the qualification.

Mapping qualification aims to units

General aims

Key: Aim is relevant to unit (X) Aim is not relevant to unit (—)

Unit code	Unit title	General aim 1	General aim 2	General aim 3	General aim 4	General aim 5
J68M 48	Computer Science	X	X	X	X	X
J7DX 48	Professional Practice in Computer Science	X	X	X	X	X
J7DH 48	Algorithms and Data Structures	X	X	X	X	X
J7DT 48	Applied Mathematics in Computing	X	—	X	X	X
J7DJ 48	Applied Artificial Intelligence	X	X	X	X	X
J7DV 48	Database Design and Development	X	X	X	X	X
J691 47	Emerging Technologies and Experiences	X	—	—	X	X
J7DW 48	Object Oriented Programming	X	X	X	X	X
J7DY 48	Programming Paradigms	X	X	X	X	X
J7E0 48	Virtualisation Technologies	X	X	X	X	X
J68T 48	Networking and Infrastructure	X	X	X	X	X
J7E1 48	Application Development for Web	X	X	X	X	X

Specific aims

Key: Aim is relevant to unit (X) Aim is not relevant to unit (—)

Unit code	Unit title	Specific aim 1	Specific aim 2	Specific aim 3	Specific aim 4	Specific aim 5	Specific aim 6	Specific aim 7	Specific aim 8
J68M 48	Computer Science	X	X	—	X	X	X	X	X
J7DX 48	Professional Practice in Computer Science	X	X	—	X	X	X	X	X
J7DH 48	Algorithms and Data Structures	X	—	X	X	X	X	—	X
J7DT 48	Applied Mathematics in Computing	X	—	X	—	—	X	—	X
J7DJ 48	Applied Artificial Intelligence	X	X	—	X	X	X	X	X
J7DV 48	Database Design and Development	X	X	—	X	X	X	X	X
J691 47	Emerging Technologies and Experiences	X	X	—	—	—	—	X	X
J7DW 48	Object Oriented Programming	X	X	—	X	X	X	—	X
J7DY 48	Programming Paradigms	X	X	—	X	X	X	—	X
J7E0 48	Virtualisation Technologies	X	X	—	X	X	X	X	X
J68T 48	Network Infrastructure	X	X	—	X	X	X	X	X
J7E1 48	Application Development for Web	X	X	—	X	X	X	X	X

Mapping NOS to units

The NOS for Information Technology Professionals are organised into 11 disciplines, each with a set of sub-disciplines. The following information lists the sub-disciplines that cover the key areas in HND Computer Science:

1 Digital Leadership Personal Competencies
1.1 Business Competencies

2 Business Analysis and Change Management
2.6 Requirements Engineering

4 Architecture, Analysis and Design
4.1 Systems Architecture
4.2 Data Analysis
4.4 Systems Analysis
4.5 Data Design
4.8 IT Infrastructure Design and Planning

5 Solution Development Systems Development
5.1 Software Development
5.5 Software Process Improvement
5.6 DevOps
5.7 User Centred Development

6 Cyber Security (IT Professional)
6.1 Information Security Management

7 Service Management and Delivery
7.1 IT Service Operations and Event
7.8 Change and Release Management

8 Data Science
8.3 Data Science
8.4 Artificial Intelligence (AI)
8.5 Machine Learning

9 IT Networks Network Services Planning
9.1 Network Design

Mapping NOS and/or trade or professional body requirements to units

Unit code	Unit title	NOS for IT Professionals sub-disciplines
J68M 48	Computer Science	4.1, 4.2, 5.1, 6.1, 9.1
J7DX 48	Professional Practice in Computer Science	1.1, 2.6, 4.1, 7.1, 8.1, 9.1
J7DH 48	Algorithms and Data Structures	5.1, 5.2, 5,5, 5.6, 8.3, 8.4, 8.5
J7DV 48	Database Design and Development	4.1, 4.2, 4.5, 8.1
J7DW 48	Object Oriented Programming	5.1, 5.7
J7DY48	Programming Paradigms	5.1
J7E0 48	Virtualisation Technologies	4.1, 4.8, 7.1, 9.1
J7DJ 48	Applied Artificial Intelligence	4.2, 4.5, 6.1, 8.3, 8.4, 8.5
J691 47	Emerging Technologies and Experiences	4.1, 5.1, 6.1, 7.1, 8.1, 9.1
J68T 48	Network Infrastructure	2.6, 4.1, 4.8, 7.1, 9.1
J7E1 48	Application Development for Web	1.1, 5.1, 5.2, 5.7, 8.1

Mapping opportunities to develop meta-skills across the qualification

Self-management

Unit code	Unit title	Meta-skills
J68M 48	Computer Science	♦ Focusing ♦ Adapting ♦ Initiative
J7DX 48	Professional Practice in Computer Science	♦ Focusing ♦ Integrity ♦ Adapting ♦ Initiative
J7DH 48	Algorithms and Data Structures	♦ Focusing
J7DT 48	Applied Mathematics in Computing	♦ Focusing ♦ Initiative
J7DJ 48	Applied Artificial Intelligence	♦ Focusing ♦ Integrity ♦ Initiative
J7DV 48	Database Design and Development	♦ Focusing ♦ Integrity ♦ Adapting ♦ Initiative
J691 47	Emerging Technologies and Experiences	♦ Integrity
J7DW 48	Object Oriented Programming	♦ Focusing
J7DY 48	Programming Paradigms	♦ Focusing ♦ Adapting ♦ Initiative
J7E0 48	Virtualisation Technologies	♦ Focusing ♦ Adapting ♦ Initiative
J68T 48	Networking and Infrastructure	♦ Focusing ♦ Adapting
J7E1 48	Application Development for Web	♦ Focusing ♦ Integrity ♦ Adapting ♦ Initiative

Social intelligence

Unit code	Unit title	Meta-skills
J68M 48	Computer Science	♦ Communicating ♦ Collaborating
J7DX 48	Professional Practice in Computer Science	♦ Communicating ♦ Feeling ♦ Collaborating ♦ Leading
J7DJ 48	Applied Artificial Intelligence	♦ Communicating
J7DV 48	Database Design and Development	♦ Communicating ♦ Collaborating ♦ Leading
J7DW 48	Object Oriented Programming	♦ Communicating ♦ Collaborating
J68T 48	Networking and Infrastructure	♦ Communicating ♦ Collaborating ♦ Leading
J7E1 48	Application Development for Web	♦ Communicating ♦ Collaborating ♦ Leading

Innovation

Unit code	Unit title	Meta-skills
J68M 48	Computer Science	♦ Curiosity ♦ Sense-making ♦ Critical thinking
J7DX 48	Professional Practice in Computer Science	♦ Curiosity ♦ Creativity ♦ Sense-making ♦ Critical thinking
J7DH 48	Algorithms and Data Structures	♦ Creativity ♦ Curiosity ♦ Sense-making ♦ Critical Thinking
J7DT 48	Applied Mathematics in Computing	♦ Sense-making ♦ Critical Thinking
J7DJ 48	Applied Artificial Intelligence	♦ Sense-making ♦ Critical Thinking
J7DV 48	Database Design and Development	♦ Creativity ♦ Sense-making ♦ Critical thinking
J691 47	Emerging Technologies and Experiences	♦ Sense-making ♦ Critical thinking
J7DW 48	Object Oriented Programming	♦ Creativity ♦ Sense-making ♦ Critical Thinking
J7DY 48	Programming Paradigms	♦ Creativity ♦ Sense-making ♦ Critical Thinking
J7E0 48	Virtualisation Technologies	♦ Creativity ♦ Sense-making ♦ Critical thinking
J68T 48	Networking and Infrastructure	♦ Creativity ♦ Sense-making ♦ Critical thinking
J7E1 48	Application Development for Web	♦ Creativity ♦ Critical thinking ♦ Sense-making

Assessment strategy for the qualification

Unit code	Unit title	Assessment method
J68M 48	Computer Science	♦ Knowledge evidence: No sampling frame is provided for question paper. Otherwise, there should be at least one evaluation of a contemporary ethical issue in computer science. ♦ Product evidence: One or more assembly language programs. One or more relational (normalised) databases.
J7DX 48	Professional Practice in Computer Science	♦ Product evidence (team): This is an extended team project of sufficient size and complexity to require a team solution. The project team will produce a report of how they planned and managed the project, analysed requirements, designed and implemented a solution, and their conclusions and recommendations. The project may also be a research question to be addressed, in which case the report will relate to the design and conduct of the research and the conclusions and/or recommendations from it. ♦ Product evidence (individual): A reflective report on the individual learner's contribution to the project. ♦ Performance evidence: A team presentation of the conduct of the project, the outcomes and solution. ♦ Meta-skills: A reflective report showing that the individual has self-assessed their meta-skills, created a plan for development and carried out activities that improved and developed their meta-skills. ♦ Learning for Sustainability: A report on how a computer science process or product could be made more sustainable to meet the aims of at least two selected UN SDGs.
J7DH 48	Algorithms and Data Structures	♦ Product evidence: Learners design, code and test one or more computer programs that cover all skills components. The evidence requirement specifies a list of mandatory functions to be coded in lightly-controlled conditions.
J7DT 48	Applied Mathematics in Computing	♦ Knowledge evidence: A question paper with a sampling frame provided. ♦ Product evidence: Learners use software or write program code to carry out mathematical and statistical operations to satisfy a list of requirements.

Unit code	Unit title	Assessment method
J7DJ 48	Applied Artificial Intelligence	♦ Knowledge evidence: Sampling frame provided for question paper. Otherwise, learners can develop a portfolio of research or investigations. ♦ Product evidence: From a given brief, learners select and use AI services or tools and interpret the results.
J7DV 48	Database Design and Development	♦ Product evidence: From a given brief, learners design and develop a normalised relational database and populate it. They create a set of queries to access, manage and analyse the data. From a given brief, learners design and develop a NoSQL database. They create a set of queries to manage and analyse NoSQL data.
J691 47	Emerging Technologies and Experiences	♦ Knowledge evidence: In any form of media, learners demonstrate knowledge relating to each outcome.
J7DW 48	Object Oriented Programming	♦ Product evidence: Learners investigate and apply OOP techniques. They implement a given object-oriented design, produce test documentation, and troubleshoot code errors.
J7DY 48	Programming Paradigms	♦ Knowledge evidence: Learners explain and give examples of each paradigm. They compare and contrast paradigms, taking account of key characteristics and use cases. Where a question paper is used, a sampling frame is suggested. ♦ Product evidence: Learners solve a given problem using at least two of the paradigms and produce an evaluation report on the outcomes.
J7E0 48	Virtualisation Technologies	♦ Knowledge evidence: Sampling frame (extensive) provided for question paper. ♦ Product evidence: Learners demonstrate their competence in building a virtual machine and deploying applications to a virtual machine in the cloud. They demonstrate virtualisation on desktop PC.
J68T 48	Networking and Infrastructure	♦ Knowledge evidence: A theoretical assessment. Can be a closed-book test. ♦ Product evidence: From a given scenario, learners design and build a network, including cabling and configuration of network services. Learners demonstrate their practical skills in network troubleshooting and testing.

Unit code	Unit title	Assessment method
J7E1 48	Application Development for Web	♦ Product evidence: From a given brief, learners design and build a secure, full-stack, interactive web app using current front-end and back-end technologies. They deploy to the internet, use version control and repositing, and document the app, including testing.

Approaches to delivery and assessment

While conventional teaching methods like lectures and discussions are beneficial for introducing foundational knowledge, you should also encourage active participation in discussions, to ensure learners understand the concepts and ideas of computer science. You should also give learners the opportunity to gain presentation skills by assigning research topics to be reported back to the class.

Computer science is a practical field, so it is crucial to engage your learners in labs and workshops where they can apply the theory they have learned. You should set up coding exercises, practical labs on databases, and networking exercises. You can set problems that require learners to apply their knowledge in a practical way, such as designing an algorithm to solve a particular problem.

For some units, you can encourage learners to work collaboratively. The Professional Practice unit is a large extended project in which learners experience more formal approaches to project planning and management. This can mimic a real-world working environment and enhance their teamwork and communication skills. You could also engage learners in collaborative activities, such as code reviews or hackathons.

You should encourage self-guided learning by signposting resources to be accessed outwith class time. Typical sources are industry blogs, podcasts, vendor training videos, and online courses. Inviting industry experts for guest lectures or webinars is another way to expose learners to real-world applications and emerging trends.

Sequencing or integrating units

You should prioritise the Computer Science mandatory unit for delivery as early as possible, as it provides underpinning concepts for many of the optional units. You should also commence the mandatory project unit (Professional Practice in Computer Science) whenever you are confident that the learners have sufficient breadth of knowledge in their optional topics to apply the concepts, principles and skills acquired in them.

You should consider where you can deliver units in tandem to enhance learning, or where sequential delivery might provide the best learning opportunity. In all the units in this HND, the approach you take should be to realise the computer science concepts through practical experiences with real-world problems demanding a computational solution. The more realistic these are, the more powerful the learning experience will be. The increasing availability of virtual cloud infrastructures from technology vendors increases scope to challenge learners to apply their knowledge and skills to unfamiliar contexts.

As indicated above, some units would benefit from co-delivery to enhance the learning experience. Typical examples of these could be:

- Programming Paradigms and Object Oriented Programming
- Algorithms and Data Structures and Applied Mathematics for Computing
- Virtualisation Technologies and Networking and Infrastructure

Many of the units are suited to assessment in the form of assignments and/or projects. In such cases the product evidence is clearly specified in each unit and centres should use this information to plan work that enables the evidence requirements to be met. The case studies and assignments used for the purpose of generating assessment evidence should be as real-world as possible, while considering the SCQF level of the unit. Where program code is required, centres should ensure that learners have sufficient access to programming resources such as an integrated development environment (IDE) or notebook-style coding environments.

Additional guidance on integrated or holistic assessment

Holistic or integrated assessment focuses on assessing several outcomes in a unit together, or in some cases the whole unit, rather than specific outcomes. When assessing a unit of competence holistically, the assessment activities integrate aspects of the competence. Holistic or integrated assessment can reduce the time spent on assessment and can promote greater equity in the assessment process.

When developing or revising a Higher National qualification, SQA works with a development team to devise an appropriate assessment strategy that accommodates holistic or integrated assessment. However, the practice of integrating units for the purposes of learning and teaching is a centre-led activity.

Units are designed to facilitate holistic or integrated assessment approaches that prevent large, unwieldy instruments of assessment.

Sometimes more than one piece of evidence is needed for a unit. For example, if a unit is about building a wall, a learner would need to produce evidence of performance (following the correct procedures and processes when building the wall) and product (a completed wall).

Evidence requirements must do what they say: specify requirements for evidence of learner competence in the unit or units. The evidence must be of sufficient quality for an assessor or verifier to judge that the learner has achieved the unit or units.

Assessing project units

The Professional Practice in Computer Science unit comprises a project that is sufficiently large or complex to require analysis and solution by a project team. This could be research into one or more aspects of computer science, such as AI or machine learning. It could also be a problem that requires a computing solution, such as the design and implementation of an algorithm. You group your learners into teams of three to five learners, considering the preferences expressed by learners in relation to the available projects and your judgement of an appropriate composition for each team, which should vary in terms of age, gender, ability and other relevant characteristics.

You should have a range of computer science projects or research themes that would be suitable to enable learners to demonstrate the outcomes of the project unit. The requirements must be sufficiently complex to require formal project management and development approaches. You should select these to be as real-world as possible and aligned to the level of study required. The project should allow learners to draw on the range

of outcomes in their Higher National Qualification and make it possible for them to develop their meta-skills while engaging in the project. To standardise the learner experience and level of demand, you should use a template to describe the objectives and required outcomes for each project to be offered to the groups of learners.

You should:

- approve projects
- assign learners to teams
- ensure each team allocates roles at the beginning of the project
- receive briefings from each team on progress against milestones
- observe and record the contributions of individual learners to teamwork and the problem solution
- arrange for the presentation of the project outcomes and solution
- intervene to guide and support learners when circumstances require it

You should approach your role with a light touch, leaving each team to make their own decisions about a project methodology, as well as roles, timelines, resource allocations and meetings. We recommend that each learner leads a specific part of the project (such as lead designer or lead researcher).

The product evidence is the outcome of the research or the solution to a computer science problem. Each project team must collectively produce items 1 to 5 below. Each learner must individually produce item 6. Learners must provide the following product evidence:

1 the project plan based on requirements gathering and analysis
2 the solution to the problem or the conclusions from the research
3 a project report (including project evaluation)
4 documentation of the process and outcomes
5 presentation of the project outcomes and demonstration of solution
6 personal statement

The learner's personal statement must:

- describe their specific role or roles in the project team
- include a self-evaluation of their contribution to the progress and completion of the project

The performance evidence is in two parts:

- a record of the learner's professional behaviours and contributions to the project; this may be in the form of a checklist
- a recording of performance in delivering the presentation

Each learner must make an identifiable contribution to the final presentation of the project outcomes and the demonstration of the solution (where required). This contribution can be in any form that is appropriate and agreed with the tutor.

Opportunities for e-assessment

Assessment that is supported by information and communication technology (ICT), such as e-testing or the use of e-portfolios or social software, may be appropriate for some assessments in this unit.

If you want to use e-assessment, you must ensure that you apply the national standard to all evidence and that conditions of assessment (as specified in the evidence requirements) are met, regardless of the mode of gathering evidence.

Learners need to use software products for most of the assessments that require product evidence. This results in a high proportion of digital evidence, which can be gathered in an e-portfolio.

Where knowledge evidence is required, this can often be generated in digital form, such as text documents, slide decks, audio files and video recordings. Where testing is used, then you should adopt online approaches to tests where practicable.

Remediation and re-assessment in Next Generation Higher National Qualifications

Remediation

Remediation allows an assessor to clarify learners' responses, either by requiring a written amendment or by oral questioning, where there is a minor shortfall or omission in evidence requirements. In either case, the assessor must formally note such instances, in writing or as a recording, and make them available to the internal and external verifier.

Remediation is not permitted for closed-book assessments.

The size and structure of the larger NextGen: HN units should mean that the assessor or lecturer is close enough to ongoing assessment activity in project-based units to identify the requirement for remediation as it occurs.

Re-assessment

We must give learners who fail the unit a re-assessment opportunity or, in exceptional circumstances, two re-assessment opportunities. Where we have introduced larger units to the framework, we expect instances of re-assessment to be minimal, due to the approach to assessment and remediation. Where re-assessment is required in a project-based unit, a substantially different project must be used.

Resource requirements

To ensure that learners can develop their knowledge and skills across the mandatory and optional units in the framework, you should consider the following resources:

- access to computer workstations that have reliable and fast internet access. These must be sufficient to perform coding exercises, access video-based instruction and support collaboration. Server technology is required for virtualisation technologies and potentially some AI model training. These can be physical servers or cloud-based servers
- the computer workstations should have good quality graphic processing units (GPUs) for image rendering and for the Artificial Intelligence unit. Networking lab equipment, such as routers, switches and firewalls, are required for the Networking and Infrastructure unit
- software provision should include integrated development environments (IDEs) such as Eclipse, IntelliJ IDEA, or Visual Studio Code and text editors for coding. The programming paradigms unit requires access to a range of programming languages, including Java, Python, C++, Javascript and Haskell. Jupyter Notebooks or Google CoLab could be used for collaborative work in coding
- coding practice platforms such as HackerRank or LeetCode could be helpful to gain programming skills
- for AI and mathematical computations, you should make available libraries such as PyTorch, Keras, Scikit-learn, NumPy, or SciPy. You should provide frameworks such as Node.js, React, Angular or Flask for the Web Development unit
- for the Database unit, you should provide tools such as MySQL, MongoDB, PostgreSQL or SQLite. For the Virtualization Technology unit, potential tools that you might use include VMware, Oracle VirtualBox, Hypervisor, and Docker

- for the Networking unit, you require network simulators such as Cisco Packet Tracer or GNS3
- to deliver the Applied Mathematics in Computing unit, you might supplement your teaching with mathematical software such as MATLAB or Mathematica
- for group projects and communication, you could make use of collaboration tools like Google Workspace or Microsoft Teams
- you should provide links as appropriate to websites, such as blogs, tutorials or online courses to support independent learning

Information for centres

Equality and inclusion

The units in this qualification are designed to be as fair and as accessible as possible, with no unnecessary barriers to learning or assessment.

You should take into account the needs of individual learners when planning learning experiences, selecting assessment methods, or considering alternative evidence.

Guidance on assessment arrangements for disabled learners and/or those with additional support needs is available on the assessment arrangements web page.

Internal and external verification

All instruments of assessment used in this qualification should be internally verified according to your centre's policies and SQA's guidelines.

SQA carries out external verification to ensure that internal assessment meets the national guidelines for this qualification.

Further information on internal and external verification is available in SQA's Guide to Assessment.

Glossary

SQA credit value: the credit value allocated to a unit gives an indication of the contribution the unit makes to an SQA qualification. An SQA credit value of 1 represents approximately 40 hours of programmed learning, teaching, and assessment.

SCQF: the Scottish Credit and Qualifications Framework (SCQF) provides the national common framework for describing programmes of learning and qualifications in Scotland. SCQF terminology is used throughout this guide to refer to credits and levels. For further information on the SCQF, visit the SCQF website.

SCQF credit points: SCQF credit points provide a way of describing and comparing the amount of learning required to complete a qualification at a given level of the framework. 1 National Unit credit is equivalent to 6 SCQF credit points. 1 National Unit credit at Advanced Higher and 1 SQA Advanced unit credit (irrespective of level) is equivalent to 8 SCQF credit points.

SCQF levels: the level a qualification is assigned in the framework is an indication of how hard it is to achieve. The SCQF covers 12 levels of learning. SQA Advanced Certificates and SQA Advanced Diplomas are available at SCQF levels 7 and 8, respectively. SQA Advanced units are usually at levels 6 to 9 and graded units at level 7 and 8. National Qualification Group Awards are available at SCQF levels 2 to 6 and are usually made up of National Units, which are available from SCQF levels 2 to 7.

Information for learners

HND Computer Science

This information explains:

- what the qualification is about
- what you should know or be able to do before you start
- what you will need to do during the qualification
- opportunities for further learning and employment

Qualification information

The Higher National Diploma (HND) Computer Science provides you with the opportunity to gain the high-quality knowledge and skills you need to pursue a career in the ever-evolving field of modern computing and IT technologies. The demand for computer science professionals remains high as business and industry increase their requirement to sustain and develop applications of computing technologies. You understand that while there are many specialisms in the field of computing, there are fundamental concepts and technologies that underpin them. By completing this HND, you are well-equipped to pursue a computing specialism of your choice or undertake further study of computer science at degree level.

In HND Computer Science, you gain understanding of important aspects of computer science, including programming, data structures, algorithms, and computer systems. You can also specialise in a particular area of computer science, such as artificial intelligence (AI), cyber security or data science.

The specific aims of the qualification are that you can:

1 understand the key concepts and principles of computer science
2 appreciate current and emerging technologies in computer science, including AI and machine learning
3 develop mathematical and statistical understanding as it relates to computer science
4 apply knowledge of principles and concepts to real-world problems
5 prepare for employment in the design, development, testing and implementation of computing solutions
6 select and apply the correct approaches to resolving problems through computing solutions
7 develop computational thinking, pattern recognition, deconstruction, logical thinking, synthesis and analysis skills
8 develop professional practices and behaviours associated with computer science
9 gain understanding of the ethical, social and legal issues associated with the use of computer systems. including those relating to diversity, inclusion and sustainability
10 prepare for progression to further studies in computer science, or related disciplines, at SCQF level 9

During the course you carry out two mandatory units that add to 7 SQA credits. In the Computer Science unit, you learn the concepts and principles that are fundamental to the practice of computer science. In the Professional Practice unit, you work in a team to carry out an extended project, such as research into a topic in computer science or developing a computing solution to a problem from contexts such as science, engineering, health, business or cybersecurity.

Before you begin, you should have a good understanding of basic concepts of computer science, such as computer programming, computer hardware and software, along with good digital skills. You should also be familiar with software tools that aid the planning and reporting on your progress. You can evidence this by having an HNC qualification in computing, or equivalent at SCQF level 7.

To achieve the HND in Computer Science, you must pass the two mandatory units and achieve at least 8 SQA credits from a group of optional units. You can select optional units relating to a specialist area of computing.

You are assessed through a variety of approaches that reflect modern practice in assessment, including the use of projects, assignments, and investigations, as well as question papers. You are encouraged to use a range of media to present evidence, such as video, audio, web pages and social media platforms.

Your final award (provided all units are passed) is graded in a manner that reflects the quality of your work over the course. Project work that you have completed in the units of the course are graded according to a set of criteria that relate to the competences expected of a computer scientist.

Throughout the HND Computer Science you also develop your personal meta-skills while studying industry and sector-specific content. Meta-skills are higher-order skills that support the development of other skills and promote success in any context. They enable you to respond to professional challenges and opportunities by reflecting on, developing, applying and adapting industry skills and sector knowledge. These meta-skills are grouped into three categories: self-management, social intelligence, and innovation.

In line with government policy, you also develop your knowledge, skills and values related to the challenges of sustainability. You are encouraged to ask questions, analyse, think critically and work with others to make positive contributions to a sustainable future.

Successful completion of the HND Computer Science opens up career opportunities in a junior computing role. It also prepares you for progression to a degree-level qualification in computer science or further study in related computing topics.

Administrative information

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History of changes

Version	Description of change	Date

Note: please check SQA's website to ensure you are using the most up-to-date version of this guide, and check SQA's APS Navigator to ensure you are using the most up-to-date qualification structure.

If a unit is revised:

- no new centres can be approved to offer the previous version of the unit
- centres should only enter learners for the previous version of the unit if they can complete it before its finish date

For further information on SQA's Next Generation Higher National Qualifications please contact nextgen@sqa.org.uk.