Qualification Specification for:

OCN NI Level 2 Award in Smart Building Technologies

> **Qualification No: 610/3131/8**

Qualification Regulation Information

OCN NI Level 2 Award in Smart Building Technologies
Qualification Number: 610/3131/8

Operational start date: 15 July 2023
Operational end date: 14 July 2028
Certification end date: 14 July 2030

Qualification operational start and end dates indicate the lifecycle of a regulated qualification. The operational end date is the last date by which learners can be registered on a qualification and the certification end date is the last date by which learners can claim their certificate.

All OCN NI regulated qualifications are published to the Register of Regulated Qualifications (**http://register.ofqual.gov.uk/**). This site shows the qualifications and awarding organisations regulated by CCEA Regulation and Ofqual.

OCN NI Contact Details

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Foreword

This document explains OCN NI's requirements for the delivery and assessment of the following regulated qualification:

→ **OCN NI Level 2 Award in Smart Building Technologies**

This specification sets out:

- Qualification features
- Centre requirements for delivering and assessing the qualification
- The structure and content of the qualification
- Unit details
- Assessment requirements for the qualification
- OCN NI's quality assurance arrangements for the qualification
- Administration

OCN NI will notify centres in writing of any major changes to this specification. We will also publish changes on our website at **www.ocnni.org.uk**

This specification is provided online, so the version available on our website is the most up to date publication. It is important to note that copies of the specification that have been downloaded and printed may be different from this authoritative online version.

Contents

About Regulation

OCN NI

Open College Network Northern Ireland (OCN NI) is a regulated Awarding Organisation based in Northern Ireland. OCN NI is regulated by CCEA Regulation to develop and award professional and technical (vocational) qualifications from Entry Level up to and including Level 5 across all sector areas. In addition, OCN NI is regulated by Ofqual to award similar qualification types in England.

The Regulated Qualifications Framework: an overview

The Regulated Qualifications Framework (RQF) was introduced on 1st October 2015: the RQF provides a single framework for all regulated qualifications.

Qualification Level

The level indicates the difficulty and complexity of the knowledge and skills associated with any qualification. There are eight levels (Levels 1-8) supported by three 'entry' levels (Entry 1-3).

Qualification Size

Size refers to the estimated total amount of time it could typically take to study and be assessed for a qualification. Size is expressed in terms of Total Qualification Time (TQT), and the part of that time typically spent being taught or supervised, rather than studying alone, is known as Guided Learning Hours (GLH).

Qualification Features

Sector Subject Area
5.2   Building and construction

Qualification Aim
The aim of the OCN NI Level 2 Award in Smart Building Technologies is to provide the learner with an understanding of the different applications of smart technology systems for the home.

Qualification Objectives
The objectives of the OCN NI Level 2 Award in Smart Building Technologies are to enable the learner to gain the skills and understanding of the following smart technology systems:

- home Wi-Fi mesh systems and how they operate and how to install them
- Artificial Intelligence (AI) assistant systems and their installation and setup
- wired and wireless domestic smart alarms systems, their function, installation and configuration
- domestic smart lighting systems function, installation and setup
- implementation of smart thermostats
- smart camera integration
- smart smoke, heat and carbon monoxide (CO) monitoring and detection systems
- how to install and configure smart home automation systems

Grading
Grading for this qualification is pass/fail.

Qualification Target Group
The OCN NI Level 2 Award in Smart Building Technologies is targeted at learners who wish to develop skills and knowledge in smart building technology.

Progression Opportunities
The OCN NI Level 2 Award in Smart Building Technologies will allow learners to progress to other construction and technology related qualifications.

Entry Requirements
Learners must be at least 16 years of age.

Qualification Support

A Qualification Support pack is available for OCN NI centres within the login area of the OCN NI website (https://www.ocnni.org.uk/my-account/), which includes additional support for teachers, eg planning and assessment templates, guides to best practice, etc.

Delivery Languages

This qualification is available in English only at this time. If you wish to offer this qualification in Welsh or Irish (Gaeilge) then please contact OCN NI who will review demand and provide as appropriate.

Centre Requirements for Delivering the Qualification

Centre Recognition and Qualification Approval
New and existing OCN NI recognised centres must apply for and be granted approval to deliver the qualification prior to the commencement of delivery.

Equipment Requirements
Centres offering this qualification must provide learners with access to industry standard equipment and technologies including buildings in order to demonstrate practical elements within each of the units.

Centre Staffing
Centres are required to have the following roles in place as a minimum, although a member of staff may hold more than one role*:

- Centre contact
- Programme Co-ordinator
- Tutor
- Assessor
- Internal Verifier

*Note: A person cannot be an internal verifier for their own assessments.

Tutors
Tutors delivering this qualification should be qualified to at least one level higher than the qualification and have at least one years' relevant industry experience.

Assessors
The qualification is assessed within the centre and is subject to OCN NI's quality assurance processes. Units are achieved through internally set, internally assessed, and internally verified evidence.

Assessors must:
- qualified to at least one level higher than the qualification and have at least one years' relevant industry experience
- have a relevant assessor qualification
- have direct or related relevant experience in assessment
- assess all assessment tasks and activities

Internal Verification

OCN NI qualifications must be scrutinised through the centre's internal quality assurance processes as part of the recognised centre agreement with OCN NI. The centre must appoint an experienced and trained centre internal verifier whose responsibility is to act as the internal quality monitor for the verification of the delivery and assessment of the qualifications.

The centre must agree a working model for internal verification with OCN NI prior to delivery of the qualifications.

Internal Verifiers must:

- qualified to at least one level higher than the qualification and have at least one years' relevant industry experience
- attend OCN NI's internal verifier training if not already completed or have relevant internal verification qualifications

Internal verifiers are required to:
- support tutors and assessors
- sample assessments according to the centre's sampling strategy
- ensure tasks are appropriate to the level being assessed
- maintain up-to-date records supporting the verification of assessment and learner achievement

Structure and Content

OCN NI Level 2 Award in Smart Building Technologies

In order to achieve this qualification learners must complete all eight units – 10 credits.

Total Qualification Time (TQT) for this qualification:	100 hours
Guided Learning Hours (GLH) for this qualification:	59 hours

Unit Reference Number	OCN NI Unit Code	Unit Title	Credit Value	GLH	Level
A/650/7686	CBG289	Smart Home Wi-Fi Mesh Systems	3	24	Two
D/650/7687	CBG290	Artificial Intelligence Assistant Systems	1	5	Two
F/650/7688	CBG291	Domestic Smart Security Alarm Systems	1	5	Two
H/650/7689	CBG292	Domestic Smart Lighting Systems	1	5	Two
L/650/7690	CBG293	Implementing Smart Thermostats in Smart Home Systems	1	5	Two
M/650/7691	CBG294	Integrating Smart Cameras into Smart Home Eco Systems	1	5	Two
R/650/7692	CBG295	Smart Smoke, Heat and Carbon Monoxide Monitoring and Detection Systems	1	5	Two
T/650/7693	CBG296	Smart Home Automation	1	5	Two

Unit Details

Title	Smart Home Wi-Fi Mesh Systems
Level	Two
Credit Value	3
Guided Learning Hours (GLH)	24
OCN NI Unit Code	CBG289
Unit Reference No	A/650/7686
Learn Direct Code	TH11

Unit purpose and aim(s): This unit will enable the learner to understand the types of smart home Wi-Fi mesh systems currently available, how they operate and how to install them.

Learning Outcomes	Assessment Criteria
1. Understand domestic Wi-Fi networks.	1.1. Describe current domestic Wi-Fi options available. 1.2. State the causes of poor Wi-Fi signal in a domestic property. 1.3. Compare the advantages and disadvantages of different domestic Wi-Fi network installations. 1.4. Describe the factors that may affect the performance of domestic Wi-Fi installations.
2. Be able to optimise domestic Wi-Fi networks.	2.1. Summarise options available to upgrade existing domestic Wi-Fi networks. 2.2. Assess the performance of a given domestic Wi-Fi network identifying options that may improve performance.
3. Understand the function and installation of smart home Wi-Fi mesh systems.	3.1. Describe the function and installation of the components of a domestic smart Wi-Fi mesh system including how nodes work.
4. Understand how security risks to Wi-Fi may be minimised.	4.1. Describe the different security risks associated with Wi-Fi networks, how they may be configured to minimise security risks including the importance of updating software.
5. Be able to carry out a smart home survey to determine optimal positioning of Wi-Fi equipment.	5.1. Carry out a smart home survey in a given domestic dwelling identifying possible Wi-Fi mesh equipment locations. 5.2. Assess the domestic dwelling surveyed in AC 5.1 identifying the optimal position of Wi-Fi mesh equipment.
6. Be able to set up Wi-Fi networks.	6.1. Demonstrate how to set up the following Wi-Fi network systems: a) google nest b) amazon echo

Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary

Practical demonstration	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Title	Artificial Intelligence Assistant Systems
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	5
OCN NI Unit Code	CBG290
Unit Reference No	D/650/7687
Learn Direct Code	TH11

Unit purpose and aim(s): This unit will enable the learner to understand Artificial Intelligence (AI) assistant systems and their installation and setup.

Learning Outcomes	Assessment Criteria
1. Understand AI assistant systems.	1.1. Compare the advantages and disadvantages of at least two different AI assistant systems. 1.2. Illustrate the features of a given smart speaker system.
2. Understand privacy features available for AI assistant systems.	2.1. Describe the potential security concerns associated with AI assistant systems. 2.2. Compare the privacy features of at least three different AI assistant systems.
3. Be able to assess and select AI assistant systems for home eco system applications.	3.1. Assess the appropriateness of the AI assistant systems identified in AC 1.1 for a given home installation and select best option.
4. Understand how to install and setup AI assistant systems.	4.1. Illustrate the installation and setup of a given AI assistant system.

Assessment Guidance		

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary
Practical demonstration	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Title	Domestic Smart Security Alarm Systems
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	5
OCN NI Unit Code	CBG291
Unit Reference No	F/650/7688
Learn Direct Code	TH11

Unit purpose and aim(s): This unit will enable the learner to understand wired and wireless domestic smart alarms systems, their function, installation and configuration.

Learning Outcomes	Assessment Criteria
1. Understand the working principles and functionality of domestic smart alarms systems.	1.1. Describe the working principles and functionality of wired and wireless domestic smart alarms systems.
2. Understand the role and function of the constituent parts of a wired and wireless domestic smart alarm systems.	2.1. Describe the role and function of the constituent parts of wired and wireless domestic smart alarm systems. 2.2. Compare advantages and disadvantages of domestic smart alarms to traditional alarm systems.
3. Understand issues to be considered when planning the implementation of a domestic smart alarm system.	3.1. Describe the issues to be considered when planning the implementation of a domestic smart alarm system including: a) optimal location b) traffic areas
4. Understand how to install and configure different types of domestic wireless smart alarms.	4.1. Describe different approaches that are used for the standard set up domestic wireless smart alarm systems. 4.2. Describe how to install and configure at least two different types of domestic wireless smart alarm systems.

Assessment Guidance		

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Title	Domestic Smart Lighting Systems
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	5
OCN NI Unit Code	CBG292
Unit Reference No	H/650/7689
Learn Direct Code	TH11

Unit purpose and aim(s): This unit will enable the learner to understand the function, installation and setup of domestic smart lighting systems.

Learning Outcomes	Assessment Criteria
1. Understand domestic smart lighting systems.	1.1. Compare the advantages and disadvantages of different domestic smart lighting systems. 1.2. Describe the features and functionality of different domestic smart lighting systems.
2. Understand smart bulbs.	2.1. Illustrate the evolution of traditional lighting solutions to smart bulbs. 2.2. Describe the function and construction of smart bulbs. 2.3. Compare features of at least two different types of smart bulbs.

3. Understand smart light switches, outlets and plugs.	3.1. Compare the advantages and disadvantages of different:
	  a) smart switches
	  b) smart outlets
	  c) smart plugs
	3.2. Describe the function of the following
	  a) smart switch
	  b) smart outlet
	  c) smart plugs
	3.3. Compare features currently available in at least two different:
	  a) smart switches
	  b) smart outlets
	  c) smart plugs

4. Understand how to install or modify domestic lighting circuits to support smart lighting.	4.1. Describe how domestic lighting circuits are typically installed. 4.2. Describe how domestic wiring may be installed or existing circuits may be modified to allow for the integration of smart lighting.
5. Understand how to setup a Zigbee and Wi-Fi smart lighting.	5.1. Describe the main functions and components of ZigBee and Wi-Fi smart lighting systems and how they may be setup in a domestic setting.
6. Understand how to set up a smart plug.	6.1. Illustrate how to setup a given smart plug system.
7. Understand how to connect smart lighting devices to voice assistants.	7.1. Describe the different methods of connecting smart lighting devices to voice assistants to facilitate control of devices. 7.2. Summarise the voice commands that can be setup with a voice assistant to control smart lighting devices.

Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Title	Implementing Smart Thermostats in Smart Home Systems
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	5
OCN NI Unit Code	CBG293
Unit Reference No	L/650/7690
Learn Direct Code	TH11

Unit purpose and aim(s): This unit will enable the learner to understand the implementation of smart thermostats within smart home systems.

Learning Outcomes	Assessment Criteria
1. Understand the advantages and disadvantages of smart and standard thermostats.	1.1. Compare the advantages and disadvantages of smart and standard thermostats in home heating and cooling systems.
2. Understand the working principles and function of smart and standard thermostats.	2.1. Describe the working principles and function of different smart and standard thermostats.
3. Understand issues to be considered when planning the implementation of smart thermostats.	3.1. Describe the issues to be considered when planning the implementation of a smart thermostat including: a) optimal location b) heating zones
4. Know how to install a smart and standard thermostats.	4.1. Describe the different approaches that can be used for smart and standard thermostat installation. 4.2. Compare the advantages and disadvantages of smart and standard thermostat installations.
5. Know how to connect a smart thermostat with an Artificial Intelligence(AI) assistant system.	5.1. Illustrate the installation and setup of a given AI assistant system with a smart thermostat to enable control of a smart thermostat.

Assessment Guidance		
The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.		

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Title	Integrating Smart Cameras into Smart Home Eco Systems
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	5
OCN NI Unit Code	CBG294
Unit Reference No	M/650/7691
Learn Direct Code	TH11

Unit purpose and aim(s): This unit will enable the learner to understand how to integrate smart cameras into smart home eco systems.

Learning Outcomes	Assessment Criteria
1. Understand the advantages and disadvantages of smart cameras to Closed Circuit TV (CCTV) systems.	1.1. Compare the advantages and disadvantages of smart cameras to standard CCTV systems.
2. Understand the features and function of smart cameras.	2.1. Describe the features and function of smart cameras.
3. Understand Wi-Fi and wired smart home camera set up within smart home eco systems.	3.1. Compare the differences between set up of Wi-Fi and wired smart home cameras within smart home eco systems.
4. Understand how to set up indoor and outdoor cameras.	4.1. Illustrate the setup of indoor and outdoor cameras.
5. Know how to integrate smart cameras with an Artificial Intelligence(AI) assistant system.	5.1. Illustrate the installation, setup and integration of a given AI assistant system with at least two smart cameras.

Assessment Guidance		
The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.		

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary
Practical demonstration	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Title	Smart Smoke, Heat and Carbon Monoxide Monitoring and Detection Systems
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	5
OCN NI Unit Code	CBG295
Unit Reference No	R/650/7692
Learn Direct Code	TH11

Unit purpose and aim(s): This unit will enable the learner to understand the implementation of smart smoke, heat and carbon monoxide (CO) monitoring and detection systems.

Learning Outcomes	Assessment Criteria
1. Understand advantages and disadvantages of smart and standard smoke detection alarm systems.	1.1. Compare the advantages and disadvantages of smart smoke detection alarm systems compared to standard smoke alarm systems.
2. Understand the function and construction of smart smoke, heat and CO monitoring and detection systems.	2.1. Describe the function and construction of smart smoke, heat and CO monitoring and detection systems.
3. Understand the features of different types of smart detectors.	3.1. Compare features of at least two different types of smart detectors.
4. Understand issues to be considered when planning the installation of a smart smoke detection alarm system.	4.1. Describe the issues to be considered when planning the implementation of a domestic smart smoke detection alarm system including: a) building regulations b) location of CO emitting sources
5. Know how to set up smart smoke, heat and CO detection alarm systems.	5.1. Illustrate how to setup the following smart detection systems: a) smoke b) heat c) CO

Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Title	Smart Home Automation
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	5
OCN NI Unit Code	CBG296
Unit Reference No	T/650/7693
Learn Direct Code	TH11

Unit purpose and aim(s): This unit will enable the learner to understand how to install and configure smart home automation systems.

Learning Outcomes	Assessment Criteria
1. Understand key features of smart home automation systems.	1.1. Describe the key features of at least three different types of smart home automation systems.
2. Understand the advantages and disadvantages of smart and standard home automation systems.	2.1. Compare the advantages and disadvantages of smart and standard home automation systems.
3. Know how to install and configure a smart home automation system.	3.1. Illustrate how to install and configure a smart home automation system.

Assessment Guidance		

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Quality Assurance of Centre Performance

External Verification

All OCN NI recognised centres are subject to External Verification. External verification visits and monitoring activities will be conducted annually to confirm continued compliance with the conditions of recognition, review the centre's risk rating for the qualifications and to assure OCN NI of the maintenance of the integrity of the qualifications.

The External Verifier will review the delivery and assessment of the qualifications. This will include the review of a sample of assessment evidence and evidence of the internal verification of assessment and assessment decisions. This will form the basis of the EV report and will inform OCN NI's annual assessment of centre compliance and risk. The External Verifier is appointed by OCN NI.

Standardisation

As a process, standardisation is designed to ensure consistency and promote good practice in understanding and application of standards. Standardisation events:

- make qualified statements about the level of consistency in assessment across centres delivering a qualification
- make statements on the standard of evidence that is required to meet the assessment criteria for units in a qualification
- make recommendations on assessment practice
- produce advice and guidance for the assessment of units
- identify good practice in assessment and internal verification

Centres offering units of an OCN NI qualification must attend and contribute assessment materials and learner evidence for standardisation events if requested.

OCN NI will notify centres of the nature of sample evidence required for standardisation events (this will include assessment materials, learner evidence and relevant assessor and internal verifier documentation). OCN NI will make standardisation summary reports available and correspond directly with centres regarding event outcomes.

Administration

Registration

A centre must register learners within 20 working days of commencement of a qualification.

Certification

Certificates will be issued to centres within 20 working days of receipt of correctly completed results marksheets. It is the responsibility of the centre to ensure that certificates received from OCN NI are held securely and distributed to learners promptly and securely.

Charges

OCN NI publishes all up to date qualification fees in its Fees and Invoicing Policy document. Further information can be found on the centre login area of the OCN NI website.

Equality, Fairness and Inclusion

OCN NI has considered the requirements of equalities legislation in developing the specification for these qualifications. For further information and guidance relating to access to fair assessment and the OCN NI Reasonable Adjustments and Special Considerations policies, centres should refer to the OCN NI website.

Retention of Evidence

OCN NI has published guidance for centres on the retention of evidence. Details are provided in the OCN NI Centre Handbook and can be accessed via the OCN NI website.

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