

GCSE



CCEA GCSE Specification in
**Construction
and the Built
Environment**



For first teaching from September 2017
For first assessment in Summer 2018
For first award in Summer 2019
Subject Code: 0006

Contents

1	Introduction	3
1.1	Aims	4
1.2	Key features	4
1.3	Prior attainment	4
1.4	Classification codes and subject combinations	4
2	Specification at a Glance	5
3	Subject Content	6
3.1	Unit 1: Introduction to the Built Environment	6
3.2	Unit 2: Sustainable Construction	11
3.3	Unit 3: The Construction Craft Project	14
3.4	Unit 4: Computer Aided Design in Construction	15
4	Scheme of Assessment	17
4.1	Assessment opportunities	17
4.2	Assessment objectives	17
4.3	Assessment objective weightings	17
4.4	Quality of written communication	18
4.5	Reporting and grading	18
5	Grade Descriptions	19
6	Guidance on Controlled Assessment	21
6.1	Controlled assessment review	21
6.2	Skills assessed by controlled assessment	21
6.3	Level of control	21
6.4	Task setting	21
6.5	Task taking	22
6.6	Task marking	23
6.7	Internal standardisation	23
6.8	Moderation	24
6.9	Drafting/Redrafting	24
7	Curriculum Objectives	25
7.1	Cross-Curricular Skills at Key Stage 4	25
7.2	Thinking Skills and Personal Capabilities at Key Stage 4	26

8	Links and Support	28
8.1	Support	28
8.2	Examination entries	28
8.3	Equality and inclusion	28
8.4	Contact details	29
	Appendix 1	30
	Glossary of Terms for Controlled Assessment Regulations	
	Appendix 2	32
	List of Main Materials Used in Construction of Domestic Buildings for Unit 1: Introduction to the Built Environment	
	Appendix 3	34
	Assessment and Marking Criteria for Unit 3: The Construction Craft Project	
	Appendix 4	36
	Assessment and Marking Criteria for Unit 4: Computer Aided Design in Construction	

Subject Code	0006
QAN	603/1372/9
A CCEA Publication © 2017	

1 Introduction

This specification sets out the content and assessment details for our GCSE course in Construction and the Built Environment. We have designed this specification to meet the requirements of:

- Northern Ireland GCSE Design Principles; and
- Northern Ireland GCE and GCSE Qualifications Criteria.

First teaching is from September 2017. We will make the first award based on this specification in Summer 2019.

This specification is a unitised course. The guided learning hours, as for all our GCSEs, are 120 hours.

The specification supports the aim of the Northern Ireland Curriculum to empower young people to achieve their potential and to make informed and responsible decisions throughout their lives, as well as its objectives:

- to develop the young person as an individual;
- to develop the young person as a contributor to society; and
- to develop the young person as a contributor to the economy and environment.

If there are any major changes to this specification, we will notify centres in writing. The online version of the specification will always be the most up to date; to view and download this please go to www.ccea.org.uk

1.1 Aims

This specification aims to encourage students to:

- develop a broad background knowledge and core knowledge of the construction industry;
- apply their developing knowledge in relevant, enjoyable and work-related contexts for craft products and computer aided design (CAD) projects;
- investigate opportunities to progress into further education, training or employment in the construction industry;
- experience success when applying their knowledge in work-related contexts;
- develop and practise the key transferable skills that are important in working life; and
- develop knowledge of the materials and sustainable methods used in domestic and commercial construction.

1.2 Key features

The following are important features of this specification.

- It offers opportunities to build on the skills and capabilities developed through the delivery of the Northern Ireland Curriculum at Key Stage 3.
- It encourages students to develop and practise key transferable skills and to have a positive attitude towards sustainable construction techniques.
- It helps raise achievement in a wide range of learners due to its high practical content.
- It offers students an extensive knowledge of the construction industry.
- It encourages students to develop craft skills, CAD skills and technical skills, and knowledge and understanding of the construction industry.
- It encourages a student-centred approach to learning and enables students to apply their developing knowledge in enjoyable and work-related contexts.

1.3 Prior attainment

Students do not need to have reached a particular level of attainment before beginning to study this specification.

1.4 Classification codes and subject combinations

Every specification has a national classification code that indicates its subject area. The classification code for this qualification is 0006.

Please note that if a student takes two qualifications with the same classification code, schools, colleges and universities that they apply to may take the view that they have achieved only one of the two GCSEs. The same may occur with any two GCSE qualifications that have a significant overlap in content, even if the classification codes are different. Because of this, students who have any doubts about their subject combinations should check with the schools, colleges and universities that they would like to attend before beginning their studies.

2 Specification at a Glance

The table below summarises the structure of this GCSE course.

Content	Assessment	Weightings	Availability
Unit 1: Introduction to the Built Environment	External written examination 1 hour	20%	Summer from 2018
Unit 2: Sustainable Construction	External written examination 1 hour 30 mins The paper includes questions based on pre-release materials.	30%	Summer from 2019
Unit 3: The Construction Craft Project	Controlled assessment We visit centres to moderate the results.	25%	Summer from 2018
Unit 4: Computer Aided Design in Construction	Controlled assessment Teachers mark the task and we moderate the results.	25%	Summer from 2019

Students must take at least 40 percent of the assessment (based on unit weightings) at the end of the course as terminal assessment.

3 Subject Content

We have divided this course into four units. The content of each unit and the respective learning outcomes appear below.

3.1 Unit 1: Introduction to the Built Environment

In this unit, students develop understanding of construction and the built environment, the importance of health and safety in the construction industry, and the employment opportunities in the industry.

Content	Learning Outcomes
<p>Introduction to the built environment</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> • define the built environment; • identify and discuss the following main stages of the construction cycle as detailed in the Royal Institute of British Architects (RIBA) Plan of Work (POW) 2013: <ul style="list-style-type: none"> – Strategic Definition; – Preparation and Brief; – Concept Design; – Developed Design; – Technical Design; – Construction; – Handover and Close Out; and – In Use; and • identify the following types of low-rise building and identify, compare and contrast the main characteristics of each: <ul style="list-style-type: none"> – residential, for example houses and apartments; – commercial, for example shops and offices; – industrial, for example warehouses and factories; – agricultural, for example farm outbuildings; – community, for example schools, hospitals, libraries and health centres; and – recreational and religious, for example cinemas, sports amenities and churches.

Content	Learning Outcomes
<p>Introduction to the built environment (cont.)</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> • demonstrate knowledge and understanding of the main materials (for the definitive list, see Appendix 2) used in the following in domestic buildings: <ul style="list-style-type: none"> – roof structure and joinery components, including hardwoods and softwoods; – the following internal finishes: <ul style="list-style-type: none"> self finish; applied finish; wet finish; and dry finish; – plumbing and electrical installations; and – wall construction, for example concrete and steel; • demonstrate knowledge and understanding of the properties and functions of these materials; • analyse the advantages of each of these materials; • identify the following forms of domestic dwelling and explain the main characteristics that define each type: <ul style="list-style-type: none"> – terraced and town houses; – semi-detached houses; – detached houses; – apartments, flats, high-rise buildings and multistorey buildings; and – bungalows; and • demonstrate knowledge and understanding of the following main activities in the construction industry and their contribution to the built environment: <ul style="list-style-type: none"> – building; – civil engineering, including infrastructure, for example roads, bridges, water supplies and waste water facilities; and – building services.

Content	Learning Outcomes
<p>Employment in the construction industry (cont.)</p> <p>Resource considerations</p> <p>Health and safety</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> • demonstrate knowledge and understanding of the following main craft occupations and subcontractor roles: <ul style="list-style-type: none"> – bricklayer; – electrician; – joiner; – plasterer; – wall dry lining specialist; – plumber; – domestic gas engineer; and – tiler; • demonstrate knowledge and understanding of the following resource considerations in construction, evaluating the importance of each and their interdependence: <ul style="list-style-type: none"> – supply chain; – costing; – planning; – plant labour and materials; and – social and environmental issues; • identify the duties and responsibilities of employers, employees, the self-employed and the public in relation to construction and the built environment as outlined in the Health and Safety at Work (Northern Ireland) Order 1978; • demonstrate knowledge and understanding of the risks for employers, employees, the self-employed and the public in relation to construction and the built environment; and • demonstrate knowledge and understanding of the following ways of mitigating these risks: <ul style="list-style-type: none"> – providing information; – following correct procedures; and – carrying out risk assessments.

Content	Learning Outcomes
<p>Health and safety (cont.)</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> • demonstrate knowledge and understanding of the Health and Safety at Work (Northern Ireland) Order 1978, the current Work at Height Regulations and other relevant regulations in relation to the following: <ul style="list-style-type: none"> – slips, trips, falls, excavations, and working on scaffolding and ladders; – site safety signs; – personal protective equipment (PPE); – duties of designers, manufacturers and suppliers; and – safety when working with water and gas; • demonstrate knowledge and understanding of the Electricity at Work Regulations (Northern Ireland) 1991 on using electricity and power tools on site, including working near overhead power cables; and • demonstrate knowledge and understanding of the current Control of Substances Hazardous to Health (COSHH) Regulations.

Content	Learning Outcomes
<p>Sustainable construction and renewable energy (cont.)</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> • discuss and demonstrate knowledge and understanding of why planning permission may or may not be granted for construction projects and/or plans, referring to the following: <ul style="list-style-type: none"> – current planning legislation; – environmental protection; – green belts and conservation areas; – design, scale and massing; – types of planning permission; and – enforcement of planning legislation; • demonstrate knowledge and understanding of using the following in sustainable construction: <ul style="list-style-type: none"> – timber framed construction; – wall structures; – roof structures; – water; and – recycling; • demonstrate knowledge and understanding of the following renewable energy technologies and/or materials and identify their component parts, using examples from local, European and/or global contexts related to the built environment: <ul style="list-style-type: none"> – heat pumps (ground source and air source); – wind turbines; – solar panels, including photovoltaic cells and water heaters; and – biomass; • identify how each of these technologies and/or materials can be used in construction and the built environment; and • analyse and evaluate the advantages and disadvantages of using these technologies and/or materials as alternatives to fossil fuels, referring to the following: <ul style="list-style-type: none"> – cost; – performance; and – reliability.

Content	Learning Outcomes
<p>Sustainable construction and renewable energy (cont.)</p> <p>Construction technology</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> • demonstrate knowledge and understanding of the need to reduce the environmental impact of building materials; • demonstrate knowledge and understanding of the following methods used to reduce the environmental impact of building materials: <ul style="list-style-type: none"> – modern quarrying practice; – recycling; – reusing; and – managing site waste effectively; • describe the following main elements and component parts of low-rise buildings and evaluate their purposes and performance requirements, providing standard construction details that comply with the building regulations in the Building Regulations (Northern Ireland) 2012: <ul style="list-style-type: none"> – strip foundations, including setting out; – domestic pile foundations; – walls, including head and sill (block, brick, timber and stud); – damp-proof course (DPC) or membrane; – insulation (wall, roof and floor); – floors (solid and suspended); – roofs (pitched and flat); – doors (timber, uPVC, flush, panelled, framed, legged, braced and sheeted, and associated ironmongery); – windows (uPVC and hardwood) and styles; and – stair design for domestic dwellings using mathematical formulae; • describe and evaluate how construction methods for the following are changing over time (including the development of sustainable construction methods): <ul style="list-style-type: none"> – walls, including stone, brick, block and timber walls; – roofs; and – floors, including subfloors and suspended floors; and • demonstrate, through contextualised scenarios, knowledge and understanding of the term retrofit.

3.3 Unit 3: The Construction Craft Project

In this unit, using the A3 drawings that we provide, students must complete a project based on one of the following crafts:

- woodwork; or
- brickwork or blockwork.

The craft project is made up of a product and an evaluation. For more details, see Appendix 3.

Content	Learning Outcomes
Craft project	<p>Students should be able to:</p> <ul style="list-style-type: none"> • complete a suitable craft project; • demonstrate knowledge and understanding of how to select the most appropriate materials for their chosen craft; • demonstrate knowledge and understanding of how to select the most appropriate tools (hand and power tools) for their chosen craft; • demonstrate knowledge and understanding of how to adhere to health and safety requirements when using their chosen tools and materials; • demonstrate knowledge and understanding of how to follow the correct joinery methods for the woodwork task and the correct construction methods for the brickwork or blockwork task; • demonstrate knowledge and understanding of how to use appropriate joints, fixings, components and processes for their chosen project; • demonstrate knowledge and understanding of the quality control issues related to their chosen project; and • evaluate their own work.

3.4 Unit 4: Computer Aided Design in Construction

In this unit, students develop understanding and a working knowledge of computer aided design (CAD) in the construction industry. They must produce a portfolio of work under controlled conditions, including working drawings for a domestic building and one detail drawing.

For more details, see Appendix 4.

Content	Learning Outcomes
<p>Introduction to CAD</p> <p>Set up a drawing environment appropriately</p> <p>Use a CAD package to create simple two-dimensional construction drawings</p> <p>Use the modification commands in an industry-standard CAD package</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> • demonstrate understanding of the use of CAD in the construction industry; • set up a drawing environment appropriately so that all dimensions can be entered full size; • use basic CAD commands, for example: <ul style="list-style-type: none"> – line; – circle; – arc; – ellipse; – polyline; – rectangle; – offset; – move; and – erase; • draw a range of basic building components, for example: <ul style="list-style-type: none"> – cavity wall; – concrete sill; – window; – door; and – chimney; and • use modification commands, for example: <ul style="list-style-type: none"> – trim; – stretch; – break; – extend; – scale; and – explode.

Content	Learning Outcomes
<p>Select hatch patterns</p> <p>Retrieve and plot a drawing to scale</p> <p>Produce a two-dimensional sectional drawing that conforms to appropriate standards and conventions</p> <p>Draw a floor plan and an elevation of a domestic dwelling, and plot and print to scale</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> • select hatch patterns to show the different materials used for building components such as: <ul style="list-style-type: none"> – roof tiles; – insulation; – blockwork or brickwork; – hard core; and – concrete; • demonstrate knowledge and understanding of model space and paper space by plotting a drawing to scale; • produce an annotated two-dimensional drawing that conforms to appropriate standards and conventions, and shows typical sectional details for the following: <ul style="list-style-type: none"> – foundations; – floors; – sill; – head; – eaves; – first floor; and – parapet; • demonstrate knowledge and understanding of domestic elevations and plans; • draw a floor plan and an elevation of a domestic dwelling to suitable scale, using the components that they have previously made and stored in an appropriate library; • demonstrate knowledge and understanding of how to plot and print to a suitable scale; • evaluate a given brief and make reasoned judgements; • produce an appropriate drawing output; and • save the completed work in an easily accessible electronic format, using an appropriate title.

4 Scheme of Assessment

4.1 Assessment opportunities

For the availability of examinations and controlled assessment, see Section 2.

This is a unitised specification; candidates must complete at least 40 percent of the overall assessment requirements at the end of the course, in the examination series in which they request a final subject grade. This is the terminal rule.

Candidates may resit individual assessment units once before cash-in. The better of the two results will count towards their final GCSE grade unless a unit is required to meet the 40 percent terminal rule. If it is, the more recent mark will count (whether or not it is the better result). Results for individual assessment units remain available to count towards a GCSE qualification until we withdraw the specification.

4.2 Assessment objectives

There are three assessment objectives for this specification. Candidates must:

- AO1** recall, select and communicate their knowledge and understanding of concepts, issues and terminology;
- AO2** apply their skills, knowledge and understanding, including quality standards, in a variety of contexts and in planning and carrying out investigations and tasks; and
- AO3** analyse and evaluate evidence, make reasoned judgements and present conclusions.

4.3 Assessment objective weightings

The table below sets out the assessment objective weightings for each assessment component and the overall GCSE qualification.

Assessment Objective	Unit Weighting (%)				Overall Weighting (%)
	External Assessment		Controlled Assessment		
	Unit 1	Unit 2	Unit 3	Unit 4	
AO1	8	12	5	5	30
AO2	8	12	15	15	50
AO3	4	6	5	5	20
Total Weighting	20	30	25	25	100

4.4 Quality of written communication

In GCSE Construction and the Built Environment, candidates must demonstrate their quality of written communication. They need to:

- ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear;
- select and use a form and style of writing that suit their purpose and complex subject matter; and
- organise information clearly and coherently, using specialist vocabulary where appropriate.

Quality of written communication is assessed in responses to questions and tasks that require extended writing.

4.5 Reporting and grading

We report the results of individual assessment units on a uniform mark scale that reflects the assessment weighting of each unit. We determine the grades awarded by aggregating the uniform marks that candidates obtain in individual assessment units.

We award GCSE qualifications on a grade scale from A* to G, with A* being the highest. The nine grades available are as follows:

Grade	A*	A	B	C*	C	D	E	F	G
--------------	----	---	---	----	---	---	---	---	---

If candidates fail to attain a grade G or above, we report their result as unclassified (U).

5 Grade Descriptions

Grade descriptions are provided to give a general indication of the standards of achievement likely to have been shown by candidates awarded particular grades. The descriptions must be interpreted in relation to the content in the specification; they are not designed to define that content. The grade awarded depends in practice upon the extent to which the candidate has met the assessment objectives overall. Shortcomings in some aspects of candidates' performance in the assessment may be balanced by better performances in others.

Grade	Description
A	<p>Candidates recall, select and communicate detailed knowledge and thorough understanding of construction principles, processes and resources, and of the technology and design of the built environment in different contexts.</p> <p>They apply relevant knowledge, understanding and skills in a range of situations to plan and carry out investigations and tasks effectively. They test their solutions, working safely and with a high degree of precision.</p> <p>They analyse and evaluate the evidence available, reviewing and adapting their methods when necessary. They present information clearly and accurately, making reasoned judgements and presenting substantiated conclusions.</p>
C	<p>Candidates recall, select and communicate sound knowledge and understanding of construction principles, processes and resources, and of the technology and design of the built environment in different contexts.</p> <p>They apply knowledge, understanding and skills in a range of situations to plan and carry out investigations and tasks. They test their solutions, working safely and with precision.</p> <p>They review the evidence available, analysing and evaluating some information clearly, and with some accuracy. They make judgements and draw appropriate conclusions.</p>

Grade	Description
F	<p>Candidates recall, select and communicate knowledge and understanding of basic construction principles, processes and resources, and of the technology and design of the built environment in some vocational situations.</p> <p>They apply limited knowledge, understanding and skills to plan and carry out simple investigations and tasks, with an awareness of the need for safety and precision.</p> <p>They review their evidence and draw basic conclusions.</p>

6 Guidance on Controlled Assessment

6.1 Controlled assessment review

We will replace our controlled assessment tasks every two years to ensure that they continue to set an appropriate challenge and remain valid, reliable and stimulating.

6.2 Skills assessed by controlled assessment

Teachers must assess the following skills through controlled assessment:

- planning and preparing for practical and drawing tasks; and
- completing practical and drawing tasks.

6.3 Level of control

Rules for controlled assessment in GCSE Construction and the Built Environment are defined for the three stages of the assessment:

- task setting;
- task taking; and
- task marking.

6.4 Task setting

There are two tasks for GCSE Construction and the Built Environment:

- the construction craft project in Unit 3; and
- the CAD portfolio in Unit 4.

Candidates should complete all elements of the tasks. For Unit 3, candidates complete one task from a choice of two. We provide one task for Unit 4. We will issue the tasks in May. Candidates must submit the completed tasks in the Summer series.

Centres have the opportunity to contextualise the controlled assessment tasks to suit their specific circumstances. This includes the availability of and access to resources.

We will provide centres with details of controlled assessment tasks and guidance on how to complete and submit them.

6.5 Task taking

The level of control for task taking is medium.

Areas of Control	Detail of Control
<p>Authenticity</p>	<p>Candidates must complete their assessed portfolio in the classroom under informal supervision.</p> <p>For Unit 3: The Construction Craft Project, candidates may carry out research outside of the classroom with limited supervision.</p> <p>For Unit 4: Computer Aided Design in Construction, candidates can practise the required skills outside of the classroom with limited supervision.</p> <p>Teachers must be able to authenticate the work as being the candidate's own.</p> <p>Teachers must ensure that candidates acknowledge and reference any ideas and sources used.</p>
<p>Feedback</p>	<p>Teachers must guide and supervise candidates on the following:</p> <ul style="list-style-type: none"> • monitoring progress; • preventing plagiarism; • ensuring compliance with health and safety requirements; • ensuring that work is completed in accordance with the specification requirements; and • ensuring that the work can be assessed in accordance with the procedures and marking criteria. <p>Candidates should reach their own conclusions.</p> <p>Teachers must record any support or guidance they give to candidates on the Candidate Record Sheet and adjust the marks appropriately.</p> <p>Once a candidate submits their work for assessment, no redrafting is permitted.</p>
<p>Time Limit</p>	<p>Skills development: 10 hours per unit Product and portfolio: 20 hours per unit</p>

Areas of Control	Detail of Control
Collaboration	During skills development, candidates may work with others. However, during task taking, the candidate must provide an individual response for each unit.
Resources	Before offering this course, centres with limited resources or candidates who need to use special equipment must contact us for advice on how to proceed.

6.6 Task marking

Detailed mark schemes for Unit 3 and Unit 4 will be made available at the agreement trial in the autumn term. These will subsequently be uploaded to the subject microsite.

The level of control for task marking is medium. This means that teachers mark the controlled assessment tasks using criteria that we provide. They should use professional judgement to select and apply the criteria in each successive mark band appropriately and fairly to candidates' work. They should show a 'best fit' approach when selecting a candidate's mark, making allowance for balancing strengths and weaknesses in each response.

Teachers must annotate the candidate's work in detail to ensure fairness for the candidate and to help with the moderation process. Annotation should take the form of summative comments on the work, usually at the end, and on the Candidate Record Sheet.

Teachers must ensure that the work they mark is the candidate's own. For up-to-date advice on plagiarism, or any kind of candidate malpractice, see *Suspected Malpractice in Examinations and Assessments: Policies and Procedures* on the Joint Council for Qualifications website at www.jcq.org.uk

6.7 Internal standardisation

Centres with more than one teaching group must carry out internal standardisation of controlled assessment tasks before submitting their marks to us. This is to ensure, as far as possible, that each teacher has applied the assessment criteria consistently when marking assessments. Centres may need to adjust an individual teacher's marking:

- to bring assessments into line with those of other teachers in the centre; and
- to match the standards established at the agreement trial.

If marks do change, centres must amend the total/final mark on their Candidate Record Sheet.

6.8 Moderation

For Unit 3, our visiting moderators assess a sample of candidates' work marked by teachers. If the marks the teacher awards are acceptable, the moderator confirms the marks. If they are not acceptable, the moderator may recommend an adjustment to the centre's marks to bring the assessment of the candidates' work into line with our agreed standards.

For Unit 4, centres must submit their marks and samples to us by early May in any year. We may adjust centres' marking to bring the assessment of the candidates' work into line with our agreed standards.

We issue full instructions each year on:

- our moderation procedures;
- which samples we require; and
- the deadlines for submitting marks and samples to us.

Teachers and centre staff may contact us at any stage if they require advice, assistance or support relating to any aspect of controlled assessment.

6.9 Drafting/Redrafting

Teachers must not correct candidates' work in detail and return it to them to write up a fair copy. Responsibility for drafting a piece of work towards completion lies entirely with the candidate. Once a candidate has submitted the controlled assessment and it has been awarded a mark, that mark is final. The candidate may not carry out further work.

See Appendix 1 for a glossary of controlled assessment terms. For more details, see the Joint Council for Qualifications document *Instructions for Conducting Controlled Assessments*, available at www.jcq.org.uk

7 Curriculum Objectives

This specification builds on the learning experiences from Key Stage 3 as required for the statutory Northern Ireland Curriculum. It also offers opportunities for students to contribute to the aim and objectives of the Curriculum at Key Stage 4, and to continue to develop the Cross-Curricular Skills and the Thinking Skills and Personal Capabilities. The extent of the development of these skills and capabilities will be dependent on the teaching and learning methodology used.

7.1 Cross-Curricular Skills at Key Stage 4

Communication
<p>Students should be able to:</p> <ul style="list-style-type: none"> • communicate meaning, feelings and viewpoints in a logical and coherent manner, <i>for example written evaluations;</i> • make oral and written summaries, reports and presentations, taking account of audience and purpose, <i>for example a presentation on the stages of the construction cycle, a poster presentation on the range of occupations in the construction industry and a report on sustainable construction;</i> • participate in discussions, debates and interviews, <i>for example debate the advantages and disadvantages of renewable energy and discuss design proposals;</i> and • interpret, analyse and present information in oral, written and ICT formats, <i>for example CAD, written evaluations and class presentations.</i>
Using Mathematics
<p>Students should be able to:</p> <ul style="list-style-type: none"> • use mathematical language and notation with confidence, <i>for example angular measurement;</i> • use mental computation to calculate, estimate and make predictions in a range of simulated and real-life contexts, <i>for example using scale and calculating floor and wall areas from scale drawings;</i> • select and apply mathematical concepts and problem-solving strategies in a range of simulated and real-life contexts, <i>for example costings for labour and materials;</i> • interpret and analyse a wide range of mathematical data, <i>for example reading dimensions from a drawing and interpreting sectional drawings;</i> and • present mathematical data in a variety of formats which take account of audience and purpose, <i>for example costing tables.</i>

Using ICT

Students should be able to make effective use of information and communications technology in a wide range of contexts to access, manage, select and present information, including mathematical information, *for example carrying out secondary research online, presenting written reports and using CAD for two-dimensional drawings.*

7.2 Thinking Skills and Personal Capabilities at Key Stage 4

Self-Management

Students should be able to:

- plan work, *for example preparation for craft and CAD projects;*
- set personal learning goals and targets to meet deadlines, *for example programme of work for craft and CAD projects;*
- monitor, review and evaluate their progress and improve their learning, *for example evaluation of craft project; and*
- effectively manage their time, *for example production of working drawings within the time allowed.*

Working with Others

Students should be able to:

- learn with and from others through co-operation, *for example working in groups on practice joints in Unit 3;*
- participate in effective teams and accept responsibility for achieving collective goals, *for example in contextualised design team activities; and*
- listen actively to others and influence group thinking and decision-making, taking account of others' opinions, *for example group roles in contextualised design team activities.*

Problem Solving

Students should be able to:

- propose justified explanations, *for example explain the steps required to adhere to health and safety requirements when using tools and materials;*
- reason, form opinions and justify their views, *for example evaluate their own work in the craft project and evaluate how methods of construction have changed over time;*
- analyse critically and assess evidence to understand how information or evidence can be used to serve different purposes or agendas, *for example understand the arguments in the media in favour of renewable energies;*
- analyse and evaluate multiple perspectives, *for example understand the importance of health and safety requirements for employers, employees, the self-employed and the public;*
- weigh up options and justify decisions, *for example selection of the most appropriate materials and tools for a chosen craft in the craft project;* and
- apply and evaluate a range of approaches to solve problems in familiar and novel contexts, *for example evaluate a given construction brief.*

Although not referred to separately as a statutory requirement at Key Stage 4 in the Northern Ireland Curriculum, **Managing Information** and **Being Creative** may also remain relevant to learning.

8 Links and Support

8.1 Support

The following resources are available to support this specification:

- our Construction and the Built Environment microsite at www.ccea.org.uk and
- specimen assessment materials.

We also intend to provide:

- past papers;
- mark schemes;
- Chief Examiner's reports;
- Principal Moderator's reports;
- planning frameworks;
- centre support visits;
- support days for teachers;
- agreement trials;
- controlled assessment guidance for teachers;
- controlled assessment guidance for candidates;
- a resource list; and
- exemplification of examination performance.

8.2 Examination entries

Entry codes for this subject and details on how to make entries are available on our Qualifications Administration Handbook microsite, which you can access at www.ccea.org.uk

Alternatively, you can telephone our Examination Entries, Results and Certification team using the contact details provided.

8.3 Equality and inclusion

We have considered the requirements of equality legislation in developing this specification and designed it to be as free as possible from ethnic, gender, religious, political and other forms of bias.

GCSE qualifications often require the assessment of a broad range of competences. This is because they are general qualifications that prepare students for a wide range of occupations and higher level courses.

During the development process, an external equality panel reviewed the specification to identify any potential barriers to equality and inclusion. Where appropriate, we have considered measures to support access and mitigate barriers.

We can make reasonable adjustments for students with disabilities to reduce barriers to accessing assessments. For this reason, very few students will have a complete barrier to any part of the assessment.

It is important to note that where access arrangements are permitted, they must not be used in any way that undermines the integrity of the assessment. You can find information on reasonable adjustments in the Joint Council for Qualifications document *Access Arrangements and Reasonable Adjustments*, available at www.jcq.org.uk

8.4 Contact details

If you have any queries about this specification, please contact the relevant CCEA staff member or department:

- Specification Support Officer: Nuala Tierney
(telephone: (028) 9026 1200, extension 2292, email: ntierney@ccea.org.uk)
- Subject Officer: Dawn Agnew
(telephone: (028) 9026 1200, extension 2445, email: dagnew@ccea.org.uk)
- Examination Entries, Results and Certification
(telephone: (028) 9026 1262, email: entriesandresults@ccea.org.uk)
- Examiner Recruitment
(telephone: (028) 9026 1243, email: appointments@ccea.org.uk)
- Distribution
(telephone: (028) 9026 1242, email: cceadistribution@ccea.org.uk)
- Support Events Administration
(telephone: (028) 9026 1401, email: events@ccea.org.uk)
- Moderation
(telephone: (028) 9026 1200, extension 2236, email: moderationteam@ccea.org.uk)
- Business Assurance (Complaints and Appeals)
(telephone: (028) 9026 1244, email: complaints@ccea.org.uk or appealsmanager@ccea.org.uk).

Appendix 1

Glossary of Terms for Controlled Assessment Regulations

Term	Definition
Component	<p>A discrete, assessable element within a controlled assessment/qualification that is not itself formally reported and for which the awarding organisation records the marks</p> <p>May contain one or more tasks</p>
Controlled assessment	A form of internal assessment where the control levels are set for each stage of the assessment process: task setting, task taking, and task marking
External assessment	A form of independent assessment in which question papers, assignments and tasks are set by the awarding organisation, taken under specified conditions (including detailed supervision and duration) and marked by the awarding organisation
Formal supervision (High level of control)	The candidate must be in direct sight of the supervisor at all times. Use of resources and interaction with other candidates is tightly prescribed.
Informal supervision (Medium level of control)	<p>Questions/Tasks are outlined, the use of resources is not tightly prescribed and assessable outcomes may be informed by group work.</p> <p>Supervision is confined to:</p> <ul style="list-style-type: none"> • ensuring that the contributions of individual candidates are recorded accurately; and • ensuring that plagiarism does not take place. <p>The supervisor may provide limited guidance to candidates.</p>
Limited supervision (Limited level of control)	Requirements are clearly specified, but some work may be completed without direct supervision and will not contribute directly to assessable outcomes.

Term	Definition
Mark scheme	<p>A scheme detailing how credit is to be awarded in relation to a particular unit, component or task</p> <p>Normally characterises acceptable answers or levels of response to questions/tasks or parts of questions/tasks and identifies the amount of credit each attracts</p> <p>May also include information about unacceptable answers</p>
Task	<p>A discrete element of external or controlled assessment that may include examinations, assignments, practical activities and projects</p>
Task marking	<p>Specifies the way in which credit is awarded for candidates' outcomes</p> <p>Involves the use of mark schemes and/or marking criteria produced by the awarding organisation</p>
Task setting	<p>The specification of the assessment requirements</p> <p>Tasks may be set by awarding organisations and/or teachers. Teacher-set tasks must be developed in line with awarding organisation specified requirements.</p>
Task taking	<p>The conditions for candidate support and supervision, and the authentication of candidates' work</p> <p>Task taking may involve different parameters from those used in traditional written examinations. For example, candidates may be allowed supervised access to sources such as the internet.</p>
Unit	<p>The smallest part of a qualification that is formally reported</p> <p>May comprise separately assessed components</p>

Appendix 2

List of Main Materials Used in Construction of Domestic Buildings for Unit 1: Introduction to the Built Environment

Roof structure and joinery components

- softwoods (spruce, fir, pine and larch)
- manufactured boards (plywood, MDF and chipboard)
- roofing membrane
- steel
- concrete
- clay
- slate (natural and man-made)
- uPVC
- lead
- brass
- aluminium (powder coated)
- hardwoods (native: oak, ash, beech, elm, lime and sycamore; tropical: mahogany, teak, walnut, iroko, ebony, balsa and afrormosia)
- insulation

Internal finishes

Self, applied, wet and dry internal finishes:

- timber
- plaster
- paint
- brick
- stone
- tiles
- carpet
- wallpaper
- plastic laminates
- polished metals
- glass
- plasterboard
- stainless steel
- mirror
- slate
- marble
- granite

Plumbing and electrical installations

- copper
- mild steel
- iron
- uPVC
- polybutylene
- lead
- pipe insulation

Wall construction

- brick
- clay brick
- calcium silicate brick
- common brick
- engineering brick
- concrete blocks
- sand
- cement
- water
- insulation (glass fibre, rigid polystyrene sheet and polystyrene beads, and styrofoam)
- DPC
- steel

Appendix 3

Assessment and Marking Criteria for Unit 3: The Construction Craft Project

The table below shows the marks available for the level of achievement in each part of the task. A detailed mark scheme will be issued for each new task providing further guidance on the application of the mark scheme.

Areas	Mark Band 1	Mark Range	Mark Band 2	Mark Range	Mark Band 3	Mark Range	Mark Band 4	Mark Range	Mark Band 5	Mark Range
Product: Accuracy of tolerances	1 tolerance correct.	4	2 tolerances correct.	8	3 tolerances correct.	12	4 tolerances correct.	16	5 tolerances correct.	20
Product: Suitability and standard of joints, fixings, components and processes involved	The candidate's project is not assembled and incomplete.	1-10	The candidate's project uses an appropriate range of joints, fixings, components and processes, which are incomplete and executed to a basic standard	11-20	The candidate's project uses an appropriate range of joints, fixings, components and processes, which are complete and executed to a satisfactory standard	21-30	The candidate's project uses an appropriate range of joints, fixings, components and processes, which are complete and executed to a good standard.	31-40	The candidate's project uses an appropriate range of joints, fixings, components and processes, which are complete and executed to an excellent standard	41-50
Product: Quality of finish	The candidate's project has not had a finish applied. Some preparation for a finish has taken place. Major flaws are clearly visible.	1-4	The candidate has completed a project that is finished to a basic standard; basic preparation has taken place. Some flaws are clearly visible.	5-8	The candidate has completed a project that is of a satisfactory standard; satisfactory preparation has taken place. A few flaws are clearly visible.	9-12	The candidate has completed a project that is of a good standard; good preparation has taken place. One or two flaws may be visible.	13-16	The candidate has completed a project that is of an excellent standard; excellent preparation has taken place. No flaws are clearly visible.	17-20

Areas	Mark Band 1	Mark Range	Mark Band 2	Mark Range	Mark Band 3	Mark Range	Mark Band 4	Mark Range	Mark Band 5	Mark Range
Product evaluation	<p>The candidate has described and evaluated one problem area.</p> <p>The candidate's spelling, grammar and punctuation is limited.</p>	1-2	<p>The candidate has described and evaluated two problem areas.</p> <p>The candidate's spelling, grammar and punctuation is basic.</p>	3-4	<p>The candidate has described and evaluated three problem areas.</p> <p>The candidate's spelling, grammar and punctuation is satisfactory.</p>	5-6	<p>The candidate has described and evaluated four problem areas.</p> <p>The candidate's spelling, grammar and punctuation is good.</p>	7-8	<p>The evaluation contains a detailed critique of the candidate's progress throughout the project.</p> <p>Judgements made are sound; improvements suggested are logical and coherently presented.</p> <p>The candidate's spelling, grammar and punctuation are excellent. The form and style of the evaluation are clear and coherent and they use specialist terms appropriately.</p>	9-10

When a candidate has not met any of the above criteria then a zero, 0, mark should be awarded.

Appendix 4

Assessment and Marking Criteria for Unit 4: Computer Aided Design in Construction

The table below shows the marks available for the level of achievement in each task. A detailed mark scheme will be issued for each new task providing further guidance on the application of the marking criteria.

Areas	Mark Band 1	Mark Range	Mark Band 2	Mark Range	Mark Band 3	Mark Range	Mark Band 4	Mark Range	Mark Band 5	Mark Range
Clear ability to produce a sectional detail by using drawing commands and hatching to an appropriate scale.	There is a limited degree of accuracy to complete a sectional detail, with limited use of scale.	1-4	There is a basic degree of accuracy to complete a sectional detail, with basic use of scale.	5-8	There is a satisfactory degree of accuracy to complete a sectional detail, with appropriate use of scale.	9-12	There is a good degree of accuracy to complete a sectional detail, with appropriate use of scale.	13-16	There is an excellent degree of accuracy to complete a sectional detail, with appropriate use of scale.	17-20
Independent use of drawing commands and hatch commands to create the completed drawing of a front elevation of a specified building.	There is a limited degree of accuracy in the production of the drawing. The candidate demonstrates a limited degree of accuracy when hatching and printing the drawing to scale.	1-5	There is a basic degree of accuracy in the production of the drawing. The candidate demonstrates a basic degree of accuracy when hatching and printing the drawing to scale.	6-10	There is a satisfactory degree of accuracy in the production of the drawing. The candidate demonstrates a satisfactory degree of accuracy when hatching and printing the drawing to scale.	11-15	There is a good degree of accuracy in the production of the drawing. The candidate demonstrates a good degree of accuracy when hatching and printing the drawing to scale.	16-20	There is an excellent degree of accuracy in the production of the drawing. The candidate demonstrates an excellent degree of accuracy when hatching and printing the drawing to scale.	21-25

Areas	Mark Band 1	Mark Range	Mark Band 2	Mark Range	Mark Band 3	Mark Range	Mark Band 4	Mark Range	Mark Band 5	Mark Range
Independent use of drawing commands and hatch commands to create the drawing of a completed plan.	There is a limited degree of accuracy in the floor plan. The candidate demonstrates a limited degree of accuracy when hatching and printing the drawing to scale.	1-5	There is a basic degree of accuracy in the floor plan. The candidate demonstrates a basic degree of accuracy when hatching and printing the drawing to scale.	6-10	There is a satisfactory degree of accuracy in the floor plan. The candidate demonstrates a satisfactory degree of accuracy when hatching and printing the drawing to scale.	11-15	There is a good degree of accuracy in the floor plan. The candidate demonstrates a good degree of accuracy when hatching and printing the drawing to scale.	16-20	There is an excellent degree of accuracy in the floor plan. The candidate demonstrates an excellent degree of accuracy when hatching and printing the drawing to scale.	21-25
Clear ability to complete a working drawing to a high level of presentation including a title block and print drawing to scale.	There is a limited degree of accuracy in the drawing. The candidate demonstrates a limited degree of accuracy when hatching and printing the drawing to scale.	1-2	There is a basic degree of accuracy in the drawing. The candidate demonstrates a basic degree of accuracy when hatching and printing the drawing to scale.	3-4	There is a satisfactory degree of accuracy in the drawing. The candidate demonstrates a satisfactory degree of accuracy when hatching and printing the drawing to scale.	5-6	There is a good degree of accuracy in the drawing. The candidate demonstrates a good degree of accuracy when hatching and printing the drawing to scale.	7-8	There is an excellent degree of accuracy in the drawing. The candidate demonstrates an excellent degree of accuracy when hatching and printing the drawing to scale.	9-10
Clear ability to analyse a given brief and produce the required output.	The work shows a limited degree of analysis; the output is of a low standard and does not meet the requirements of the brief.	1-4	The work shows a basic degree of analysis; the output is of a basic standard but shows inconsistencies when tested against the requirements of the brief.	5-8	The work shows a satisfactory degree of analysis; the output is of a satisfactory standard but shows some inconsistencies when tested against the requirements of the brief.	9-12	The work shows a good degree of analysis; the output is of a good standard and meets the requirements of the brief.	13-16	The work shows an excellent degree of analysis; the output is of an excellent standard and accurately meets the requirements of the brief.	17-20



INVESTORS
IN PEOPLE

