



## Higher National Graded Unit specification

### General information for centres

This Graded Unit has been validated as part of the HND Sustainable Building Technology. Centres are required to develop the assessment instrument in accordance with this validated specification. Centres wishing to use another type of Graded Unit or assessment instrument are required to submit proposals detailing the justification for change for validation.

**Graded Unit title:** Sustainable Building Technology: Graded Unit 3

**Graded Unit code:** F84H 35

**Type of Graded Unit:** Examination

**Assessment Instrument:** Closed-book Examination

**Credit points and level:** 1 HN credit at SCQF level 8: (8 SCQF credit points at SCQF level 8\*)

*\*SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

**Purpose:** This Graded Unit is designed to provide evidence that the candidate has achieved the following principal aims of the HND Sustainable Building Technology:

- ◆ To develop a detailed current knowledge of the application of science, technology and management to the development of sustainable buildings with regard to their design, services and construction.
- ◆ To develop detailed knowledge and understanding of building services engineering in the context of sustainable building development.
- ◆ To develop the candidate's ability to use information in the discussion of academic issues related to sustainability of buildings and building developments.
- ◆ Prepare candidates for progression to degree level study in Building Services Engineering and related areas.

**Recommended prior knowledge and skills:** It is recommended that the candidate should have completed or be in the process of completing the following Units relating to these aims prior to undertaking this Graded Unit:

F781 35: Environmental Auditing of Buildings  
DW3W 34: Statutory Control of Buildings  
F1YK 34: Renewable Energy Systems: Microgeneration Systems  
F77Y 35: Sustainable Building Services Engineering  
F782 35: Low Environmental Impact Construction  
F32B 35: Energy Performance of Buildings

## **General information for centres (cont)**

**Core Skills:** There are no Core Skills embedded in this Graded Unit specification.

**Assessment:** This examination-based Graded Unit is a closed-book examination of three hours duration.

## Administrative Information

**Graded Unit code:** F84H 35  
**Graded Unit title:** Sustainable Building Technology: Graded Unit 3  
**Original date of publication:** October 2009  
**Version:** 01

### History of changes:

Version	Description of change	Date

**Source:** SQA

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## **Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates**

**Graded Unit title:** Sustainable Building Technology: Graded Unit 3

### **Conditions of assessment**

The assessment is based on a closed-book examination lasting three hours.

If a candidate does not achieve a pass or if a candidate wishes to upgrade, this must be based on a significantly different examination from that given originally. A candidate's grade will be based on their achievement on the new assessment event using a significantly different examination, if this results in a higher grade.

The examination should be unseen and the assessment should be conducted in controlled and invigilated conditions.

At all times, the security, integrity and confidentiality of examinations must be ensured.

### **Instructions for designing the assessment task:**

The examination should be designed to assess the candidate's critical knowledge and understanding of the topics relating to the specific aims which this Graded Unit is designed to cover. The questions and corresponding marks should be designed in accordance with the ranges indicated in the table that follows. However, the overall total mark for the examination is 100.

The format of the examination should be designed to conform to the following:

- ◆ The examination paper must be divided into five sections corresponding to the Key Integrated Topics in the following table.
- ◆ A blend of question types must be used appropriate to the level of demand.
- ◆ The aggregate marks available for the question or questions in each topic area should conform to the percentage weighting given in the following table.
- ◆ Candidates must attempt all sections.

## Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)

Key topics	Level of demand	Percentage weighting for each topic
The context of sustainable buildings (could include national priorities, planning and development, architecture practice, rural and urban potentials, statutory controls)	Recall and apply knowledge and understanding using skills of explanation, analysis, calculation, discussion, problem solving and drawing conclusions or other equivalent skills.	15%
Sustainable engineering for buildings (could include bioengineering for energy, new and evolving technologies and plant for heat and power, control systems, SUDS)	Recall and apply knowledge and understanding using skills of explanation, analysis, calculation, discussion, problem solving and drawing conclusions or other equivalent skills.	25%
Energy efficiency (could include the technology, management, financial or regulatory aspects)	Recall and apply knowledge and understanding using skills of explanation, analysis, calculation, discussion, problem solving and drawing conclusions or other equivalent skills.	20%
Environmental impact of building developments (could include, aesthetics, soil/water quality, greenhouse gas emissions, construction management, land competition)	Recall and apply knowledge and understanding using skills of explanation, analysis, calculation, discussion, problem solving and drawing conclusions or other equivalent skills.	20%
Implementation of sustainable developments (could include marketing, technical, legislative, bio-measures, accreditation schemes, and financial measures)	Recall and apply knowledge and understanding using skills of explanation, analysis, calculation, discussion, problem solving and drawing conclusions or other equivalent skills.	20%

The examination will be marked out of 100. Assessors will aggregate the marks achieved by the candidate to arrive at an overall mark for the examination. Assessors will then assign a grade to the candidate for this Graded Unit based on the following grade boundaries:

- ◆ A = 70% — 100%
- ◆ B = 60% — 69%
- ◆ C = 50% — 59%

## Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)

### Guidance on grading candidates

Candidates who meet the minimum Evidence Requirements will have their achievement graded as a C (competent), A (highly competent), or B (somewhere between A and C). The grade related criteria to be used to judge candidate performance for this Graded Unit is specified in the following table:

◆ Grade A	◆ Grade C
Is a seamless, coherent piece of work or exam script which consistently:	Is a co-ordinated piece of work or exam script which:
◆ interprets and understands the question in a way that demonstrates insight and clear understanding of issues and relationships	◆ interprets and understands the question in a way that enables the candidate to meet the basic criteria required
◆ comprehensively addresses all aspects of the question	◆ answers address the main issues of the question
◆ demonstrates a comprehensive analysis and/or evaluation of relevant information	◆ exhibits superficial analysis, evaluation and/or explanation of the question and other relevant information
◆ offers logically structured and coherently expressed responses, demonstrating consistent use of correct terminology	◆ responses convey understanding with some relevant points made but responses may be uneven
◆ is clear and well structured throughout with language and terminology used of a consistently high standard in terms of level, accuracy and technical content	◆ is structured, with language and terminology used adequate, although not always consistent, in terms of level, accuracy and technical content
◆ consolidates and integrates required knowledge and skills, linking concepts and ideas and relating answers explicitly to the question	◆ consolidates and integrates knowledge and skills but may lack continuity and consistency and does not always show clear links to concepts and ideas
◆ solutions to problems are realistic and practical in terms of the scenario	◆ solutions to problem are feasible but pay insufficient regard to practicality or viability
◆ convincingly argues and shows links between discussions and conclusions, demonstrating comprehensive knowledge and understanding as well as analysis and evaluation skills	◆ argues and justifies conclusions but these conclusions may lack reasoned understanding and may not link well to discussions
◆ provides evidence of possible alternative approaches and arguments as well as an understanding of different interpretations	◆ provides evidence of one approach and shows limited understanding of different interpretations

## **Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)**

### **Support notes**

This Unit consists of a three hour, closed book examination, covering five key topics. The question (or questions) associated with each key topic should be focussed on knowledge and skills that candidates should be expected to be able to readily recall, integrate and apply. The purpose of the examination is, in part, to prove the candidate's ability to integrate information gleaned from the Units that comprise the course, but also it provides the opportunity for candidates to achieve a grade for the examination that reflects the depth and scope of their knowledge and understanding.

The defined mandatory Units should preferably be scheduled for the first and second terms so that candidates have time to consolidate and deepen their knowledge and understanding by private study and background reading before the examination towards the end of the academic session.

It is recommended that candidates should have experienced an examination type assessment event during the delivery of the award so that they feel comfortable with the format. There should be discussions with candidates on examination technique which should include the timing, the significance of the verbs used in questions, the need to ascertain the scope of the question, and planning responses. Feedback on sample responses (formative assessment) will sharpen their examination techniques.

The examination should be completed under normal examination conditions. That is at a defined time advertised well in advance, in a quiet venue with effective invigilation facilities. Candidates should be provided with clear information regarding examination re-sits.

### **Disabled candidates and/or those with additional support needs**

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements)

## General information for candidates

**Unit Title:** Sustainable Building Technology: Graded Unit 3

**Graded Unit code:** F84H 35

This is a single credit Graded Unit (Examination) at SCQF level 8.

This Graded Unit is designed to assess your ability to recall, integrate and apply the essential knowledge and understanding required to meet the principal aims of the HND Sustainable Building Technology award. The assessment is a closed-book examination lasting three hours, held towards the end of the course, which draws together elements from the following defined Units of the Sustainable Building Technology programme:

Environmental Auditing of Buildings  
Statutory Control of Buildings  
Renewable Energy Systems: Microgeneration Systems  
Sustainable Building Services Engineering  
Low Environmental Impact Construction  
Energy Performance of Buildings

The examination consists of questions in five areas related to key aspects of the above Units. These areas are:

- ◆ The context of sustainable buildings
- ◆ Sustainable engineering for buildings
- ◆ Energy efficiency
- ◆ Environmental impact of building developments
- ◆ Implementation of sustainable developments

Each question has the marks for the question identified and the total number of marks available is 100. Assessors mark each section of the examination paper taking into account the criteria outlined. The marks for the examination are then aggregated to arrive at an overall mark for the examination. Assessors then assign an overall grade to the candidate for this Graded Unit based on the following grade boundaries:

- ◆ A = 70% — 100%
- ◆ B = 60% — 69%
- ◆ C = 50% — 59%

Candidates who fail the examination and are offered a re-sit opportunity undertake a substantially different question paper.