

# Higher National Graded Unit Specification

## General Information for Centres

This Graded Unit has been validated as part of the HNC/HND Mechanical Engineering. 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:** Mechanical Engineering: Graded Unit 2

**Graded Unit Code:** DV12 35

**Type of Graded Unit:** Project

**Assessment Instrument:** Practical Assignment

**Credit points and level:** 2 HN Credits at SCQF level 8: (16 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 HNC/HND awards in Mechanical Engineering:

- ◆ develop the candidate's ability to apply analysis and synthesis skills to the solution of mechanical engineering problems
- ◆ develop the candidate's learning and transferable skills (including Core Skills)
- ◆ develop the candidate's knowledge and skills in planning, scheduling and project management
- ◆ develop the candidate's investigation skills
- ◆ develop a range of Communication knowledge and skills relevant to the needs of mechanical incorporated engineers
- ◆ develop knowledge, understanding and skills in a range of core principles and technologies by undertaking Units in engineering drawing, quality systems, engineering principles, materials selection, statics and strength of materials, dynamics, thermofluids and pneumatics and hydraulics
- ◆ expand on the range of knowledge, understanding and skills in the core HNC Mechanical Principles and Technology section by undertaking Units in Information Technology Applications Software, Engineering Skills, Plant Systems, Heat Transfer and Fluid Mechanics, Applied Industrial Plant Maintenance, Strength of Materials Advanced and Mathematics
- ◆ allow for further specialisation within the following subject areas: CNC, CAD, Design for Manufacture, Control Systems, Mathematics, Single Phase AC Circuits, Analogue and Digital Electronics, PLC, Industrial Systems, Process and Equipment Selection, Metal and Plastic Component Manufacture, Robotics, Project Management and HVAC Design and Practice.

## General Information for Centres (cont)

**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 the above specific aims prior to undertaking this Graded Unit:

- ◆ Communication: Practical Skills
- ◆ Information Technology: Applications Software 1
- ◆ Business Awareness and Continuing Professional Development
- ◆ Engineering Drawing
- ◆ Quality Management: An Introduction
- ◆ Engineering Principles
- ◆ Mathematics for Engineering 1: Mechanical and Manufacturing
- ◆ Mathematics for Engineering 2
- ◆ Materials Selection
- ◆ Statics and Strength of Materials
- ◆ Dynamics
- ◆ Thermofluids
- ◆ Pneumatics and Hydraulics
- ◆ Engineering Skills
- ◆ Plant Systems
- ◆ Heat Transfer and Fluid Mechanics
- ◆ Strength of Materials: Advanced
- ◆ Applied Industrial Plant Maintenance

The nature of the project activity detailed in this Specification is such that it is likely that centres will wish their candidates to embark on it from the start of the second year of the HND Mechanical Engineering programme. As it is anticipated that centres will deliver the HNC Mechanical Engineering as part of the first year of the HND, it is recommended that candidates have completed all HNC Mechanical Engineering Units before commencing this project.

In principle, the project can draw on any Units in the HND Mechanical Engineering Framework although the majority of the Units should be at SCQF level 8. The project can be taken from one Mechanical Engineering area (e.g. Plant Systems) or it can span more than one technical area. However, its principal purpose is not to integrate technical content (this is covered in Mechanical Engineering: Graded Unit 1) but rather to combine such knowledge and skills as planning, scheduling, construction, testing, evaluating and reporting.

**Core Skills:** The achievement of this Unit gives automatic certification of the following:

Problem Solving at SCQF level 6

**Assessment:** This Graded Unit will be assessed by the use of a practical assignment (Mechanical Engineering Project). An assessment exemplar pack has been produced to provide centres and candidates with clear guidance as to the national standard of achievement required at SCQF level 8.

## **General Information for Centres (cont)**

In developing this specification it was decided that candidates must do a clearly identifiable individual project. However, this does not preclude individual projects being part of a larger group project. Candidates' contribution to a larger group project has the advantage of creating opportunities for the development of the Core Skill, Working with Others.

The "fleshed-out" practical assignment should provide the candidate with the opportunity to produce evidence that demonstrates she/he has met the aims of the graded unit that it covers.

## Administrative Information

**Graded Unit Code:** DV12 35

**Graded Unit Title:** Mechanical Engineering: Graded Unit 2

**Original date of publication:** August 2006

**Version:** 02 (August 2006)

### History of Changes:

Version	Description of change	Date
02	Amendment to Core Skills statement on Page 2. Document amended to comply with Disability Discrimination Act.	31/8/06

**Source:** SQA

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# **Higher National Graded Unit Specification: Instructions for designing the assessment task and assessing candidates**

## **Graded Unit Title: Mechanical Engineering: Graded Unit 2**

### **Conditions of Assessment**

The candidate should be given a date for completion of the Mechanical Engineering Project. However, the instructions for the assessment task should be distributed to allow the candidate sufficient time to assimilate the details and carry out the assessment task. During the time between the distribution of the assessment task instructions and the completion date, assessors may answer questions, provide clarification, guidance and reasonable assistance. The assessment task should be marked as soon as possible after the completion date. The final grading given should reflect the quality of the candidate's evidence at the time of the completion date. Reassessment of this Graded Unit should be based on a significantly different assessment task.

At this level, candidates should work independently. It is up to centres to take reasonable steps to ensure that the project is the work of the candidate. For example, centres may wish to informally question candidates at various stages on their knowledge and understanding of the project on which they have embarked. Centres should ensure that where research etc. is carried out in other establishments or under the supervision of others that the candidate does not receive undue assistance.

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

The assessment task is a project. The project undertaken by the candidate must be a complex task which involves:

- ◆ variables which are complex or unfamiliar
- ◆ relationships which need to be clarified
- ◆ a context which may be familiar or unfamiliar to the candidate

The project may consist of one of the following:

- ◆ mechanical hardware only
- ◆ hardware and software
- ◆ a mechanical design (which may include the use of software)
- ◆ feasibility investigation of a technical issue leading to a report with a clear set of recommendations

Examples of such projects include the following:

- ◆ installation of mechanical equipment (eg compressor, pump etc.)
- ◆ programming PLC and interfacing PLC to pick and place or other mechanical handling equipment
- ◆ design of some form of structure (eg. crane, lift etc.)
- ◆ investigation into the procurement and installation of plant for a manufacturing line

The assessment task requires the candidate to:

- ◆ produce a project brief and specification
- ◆ produce project objectives which define the long term project objectives
- ◆ draw up an initial project schedule which should be used to inform on-going project planning and development
- ◆ justify chosen project solution in relation to one or more alternative solutions

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

- ◆ develop a verification strategy for the project
- ◆ feed back to project supervisor on a regular basis
- ◆ access components, software, materials or materials for an investigation
- ◆ implement project solution
- ◆ test product or check investigation data to confirm validity of this data
- ◆ analyse test results or investigation data
- ◆ maintain a log book throughout the duration of the project
- ◆ produce a project report which conforms to appropriate reporting standards, includes an evaluation of the project strategy and what the candidate has learnt from undertaking the project
- ◆ present details of the project including a reflective account of the project Outcomes

### **Guidance on grading candidates**

Candidates who meet the minimum Evidence Requirements will have their achievement graded as C – competent, or 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.

It should be noted that in the following table the term ‘product’ could mean one of the following:

- ◆ mechanical hardware only
- ◆ hardware and software
- ◆ a mechanical design (which may include the use of software)
- ◆ feasibility study of a technical issue leading to a report with a clear set of recommendations

Whichever category is chosen, the project must relate to a practical situation demonstrating how mechanical engineering is utilised in the service of society.

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

Grade A	Grade C
<p>Is a seamless, coherent piece of work which:</p> <ul style="list-style-type: none"> <li>◆ The project brief includes all relevant information, is clear and concise and has been agreed fully with the customer.</li> </ul>	<p>Is a co-ordinated piece of work which:</p> <ul style="list-style-type: none"> <li>◆ The project brief includes complex, multi-variable information about the main technical requirements of the project and provides a cost indication and expected timescales.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The project specification is well structured, contains relevant, accurate information and any revisions made have been agreed with the customer.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The project specification provides clear details of the following: the title of the project; the objectives of the specification; the project's main technical requirements including multi-variables and an acknowledgement of any references or standards relevant to the specification.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The project objectives accurately and fully reflect the long term project targets.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The project objectives identify the key long term project targets and multi-variables.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The initial project schedule (probably in the form of a Gantt chart) contains a comprehensive list of project activities and timings. The information in the initial schedule is used to assess if the project can be completed within timescales. The schedule is monitored on a regular basis to inform on-going project planning and development.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The initial project schedule (probably in the form of a Gantt chart) shows all essential project activities and timings. Evidence that the schedule has been monitored on at least three separate occasions during the life of the project to inform on-going project planning and development should be available.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The candidate develops a substantial knowledge base to support the demands of the project.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The candidate develops a sound knowledge base to support the demands of the project.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The selected solution is justified in terms of a thorough evaluation of a range of options.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The selected solution is justified in terms of a sound evaluation involving the solution and at least one viable alternative option.</li> </ul>
<ul style="list-style-type: none"> <li>◆ A comprehensive verification strategy is developed to ensure the product is completely tested or the investigation findings are fully validated.</li> </ul>	<ul style="list-style-type: none"> <li>◆ A verification strategy is developed to test the essential parts of the product or to validate the principal investigation findings.</li> </ul>

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

Grade A	Grade C
<ul style="list-style-type: none"> <li>◆ The candidate feeds back to her/his supervisor on a regular basis, updating the supervisor on progress made and actions for the next stage of the project</li> </ul>	<ul style="list-style-type: none"> <li>◆ The candidate feeds back to her/his supervisor on at least three occasions providing an indication of progress made</li> </ul>
<ul style="list-style-type: none"> <li>◆ The candidate accesses component and/or software and/ or materials to support an investigation of the correct specification from a range of sources at the most economic price</li> </ul>	<ul style="list-style-type: none"> <li>◆ The candidate accesses components and/or software and/ or materials to support an investigation of the correct specification from a range of sources</li> </ul>
<ul style="list-style-type: none"> <li>◆ The product is constructed to a high standard and functions correctly or the investigation is carried out in a comprehensive manner</li> </ul>	<ul style="list-style-type: none"> <li>◆ The product is constructed to an acceptable standard of quality or the investigation is carried out in a sufficiently detailed manner</li> </ul>
<ul style="list-style-type: none"> <li>◆ All tests on the product are conducted in a technically correct way with due account being taken of inaccuracies introduced by the measurement processes or comprehensive checks are made on investigation data to ensure full confidence in the reliability and accuracy data.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Tests are carried out in a technically proficient way or sufficient checks are made on the investigation data to ensure reasonable confidence in the reliability and accuracy of the data.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The interpretation of test results or investigation data is accurate and the analysis of the results or data is used to identify improvements in product performance or the Outcomes of the investigation.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The interpretation of test results or investigation data is correct.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The log book is regularly maintained and provides a detailed, informal record of the candidate's thinking as the project develops including reflective comments,</li> </ul>	<ul style="list-style-type: none"> <li>◆ The log book contains a complex level of detail about project ideas and progress and there is evidence that entries have been made on at least six occasions during the life of the project,</li> </ul>
<ul style="list-style-type: none"> <li>◆ The project report is well structured, contains only relevant information, has clear and accurate conclusions and recommendations and is in clear and correct English,</li> </ul>	<ul style="list-style-type: none"> <li>◆ The project report meets acceptable standards in terms of structure, use of English and clarity, and has accurate conclusions and recommendations.</li> </ul>



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

Grade A	Grade C
<ul style="list-style-type: none"> <li>◆ The project report includes a complex and comprehensive evaluation of the project strategy and activities and includes clear evaluation of what the candidate has learnt from undertaking the project and the factors involved.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The project includes an evaluation of the project strategy and activities and includes an evaluation of what the candidate has learnt from undertaking the project.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The presentation is well structured, contains only relevant information, is to time and includes the use of appropriate aids.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The presentation is acceptably structured, contains largely relevant information and is to time.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The candidate gives clear, concise and technically accurate answers to questions raised during the presentation.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The candidate gives technically correct answers to questions raised as part of the presentation.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The candidate includes a complex, reflective account of the success, or otherwise, of project activities against project objectives in the presentation.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The candidate includes a reflective account of the success, or otherwise, of the project in the presentation.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The candidate undertakes the project with the minimum of supervision.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The candidate undertakes the project without unnecessary interventions from the project supervisor to ensure the project remains on track.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The candidate identifies clear and full details of the new knowledge and skills she/he has developed as a result of doing the project such as project management skills, investigation/research skills, keeping to deadlines, recognising limitations of knowledge — approaching expert sources.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The candidate provides at least three examples of new knowledge and skills she/he has developed as a result of doing the project.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The candidate introduces a significant novel feature into the project.</li> </ul>	<ul style="list-style-type: none"> <li>◆ None</li> </ul>
<ul style="list-style-type: none"> <li>◆ The candidate demonstrates a high level of self-motivation throughout the project.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The candidate demonstrates an acceptable level of motivation throughout the project.</li> </ul>
<ul style="list-style-type: none"> <li>◆ The candidate undertakes additional research well beyond that demanded by the project.</li> </ul>	<ul style="list-style-type: none"> <li>◆ None</li> </ul>

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

The project will be marked out of 100. Assessors will mark each stage of the project, taking into account the criteria outlined. The marks will then be aggregated to arrive at an overall mark for the project. Assessors will 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%

**Note:** the candidate must achieve all of the minimum evidence specified below for each stage of the project in order to achieve the Graded Unit.

### **Important Note:**

Centres **must** complete the following Grading Checklist for each Mechanical Engineering Project.

Completed checklists will be used as part of the external moderation process to ensure the accuracy and consistency of grading between candidates in a centre and across centres

Notes on completion of the Grading Checklist are shown on page 18.

**Scottish Qualifications Authority**

**Mechanical Engineering: Graded Unit 2 (Project)**

**Grading Unit Checklist**

**Centre Name:** \_\_\_\_\_

**Centre Number:** \_\_\_\_\_

## Grading Checklist

No.	No Grade	Grade C Criteria	Grade C	Grade B	Grade A	Grade A Criteria
1	Yes	The project brief includes complex, multi-variable information about the main technical requirements of the project and provides a cost indication and expected timescale.	Yes	Yes	Yes	The project brief includes all relevant information, is clear and concise and has been agreed fully with the customer.
2	Yes	The project specification provides clear details of the following: the title of the project; the objectives of the specification; the project's main technical requirements including multi-variables and an acknowledgement of any references or standards relevant to the specification.	Yes	Yes	Yes	The project specification is well structured, contains relevant, accurate information and any revisions have been agreed with the customer.
3	Yes	The project objectives identify the key long term project targets and multi-variables.	Yes	Yes	Yes	The project objectives accurately and fully reflect the long-term project targets.
4	Yes	The initial project schedule (probably in the form of a Gantt chart) shows all essential project activities and timings. Evidence that the schedule has been monitored on at least three separate occasions during the life of the project to inform on-going project planning and development should be available.	Yes	Yes	Yes	The initial project schedule (probably in the form of a Gantt chart) contains a comprehensive list of project activities and timings. The information in the initial schedule is used to assess if the project can be completed within the timescales. The schedule is monitored on a regular basis to inform on-going project planning and development.

**Grading Checklist (cont)**

No.	No Grade	Grade C Criteria	Grade C	Grade B	Grade A	Grade A Criteria
5	Yes	The candidate develops a sound knowledge base to support the demands of the project.	Yes	Yes	Yes	The candidate develops a substantial knowledge base to support the demands of the project.
6	Yes	The selected solution is justified in terms of a sound evaluation involving the solution and at least one viable alternative option.	Yes	Yes	Yes	The selected solution is justified in terms of a thorough evaluation of a range of options.
7	Yes	A verification strategy is developed to test the essential parts of the product or to validate the principal investigation findings.	Yes	Yes	Yes	A comprehensive verification strategy is developed to ensure the product is completely tested or the investigation findings are fully validated.
8	Yes	The candidate feeds back to her/his supervisor on at least three occasions providing an indication of progress made.	Yes	Yes	Yes	The candidate feeds back to her/his supervisor on a regular basis, updating the supervisor on progress made and actions for the next stage of the project.
9	Yes	The candidate accesses components and/or software and/or materials to support an investigation of the correct specification from a range of sources.	Yes	Yes	Yes	The candidate accesses component and/or, software and/or materials to support an investigation of the correct specification from a range of sources at the most economic price.

**Grading Checklist (cont)**

No.	No Grade	Grade C Criteria	Grade C	Grade B	Grade A	Grade A Criteria
10	Yes	The product is constructed to an acceptable standard of quality or the investigation is carried out in a sufficiently detailed manner.	Yes	Yes	Yes	The product is constructed to a high standard and functions correctly or the investigation is carried out in a comprehensive manner.
11	Yes	Tests are carried out in a technically proficient way or sufficient checks are made on the investigation data to ensure reasonable confidence in the reliability and accuracy of the data.	Yes	Yes	Yes	All tests on the product are conducted in a technically correct way with due account being taken of inaccuracies introduced by the measurement processes or comprehensive checks are made on investigation data to ensure full confidence in the reliability and accuracy data.
12	Yes	The interpretation of test results or investigation data is correct.	Yes	Yes	Yes	The interpretation of test results or investigation data is accurate and the analysis of the results or data is used to identify improvements in product performance or the Outcomes of the investigation.
13	Yes	The log book contains a complex level of detail about project ideas and progress and there is evidence that entries have been made on at least six occasions during the life of the project.	Yes	Yes	Yes	The log book is regularly maintained and provides a detailed, informal record of the candidate's thinking as the project develops including reflective comments.

**Grading Checklist (cont)**

No.	No Grade	Grade C Criteria	Grade C	Grade B	Grade A	Grade A Criteria
14	Yes	The project report meets acceptable standards in terms of structure, use of English and clarity, and has accurate conclusions and recommendations.  <b>Double Weight</b>	Yes	Yes	Yes	The project report is well structured, contains only relevant information, has clear and accurate conclusions and recommendations and is in clear and concise English.  <b>Double Weight</b>
15	Yes	The project includes an evaluation of the project strategy and activities and includes an evaluation of what the candidate has learned from undertaking the project.	Yes	Yes	Yes	The project report includes a complex and comprehensive evaluation of the project strategy and activities and includes a clear evaluation of what the candidate has learnt from undertaking the project and the factors involved.
16	Yes	The presentation is acceptably structured, contains largely relevant information and is to time.  <b>Double Weight</b>	Yes	Yes	Yes	The presentation is well structured, contains only relevant information, is to time and includes the use of appropriate aids.  <b>Double Weight</b>
17	Yes	The candidate gives technically correct answers to questions raised as part of the presentation.	Yes	Yes	Yes	The candidate gives clear, concise and technically accurate answers to questions raised during the presentation.

**Grading Checklist (cont)**

No.	No Grade	Grade C Criteria	Grade C	Grade B	Grade A	Grade A Criteria
18	Yes	The candidate includes a reflective account of the success, or otherwise, of the project in the presentation.	Yes	Yes	Yes	The candidate includes a complex, reflective account of the success, or otherwise, of project activities against project objectives in the presentation.
19	Yes	The candidate undertakes the project without unnecessary interventions from the project supervisor to ensure the project remains on track.	Yes	Yes	Yes	The candidate undertakes the project with the minimum of supervision.
20	Yes	The candidate provides at least three examples of new knowledge and skills she/he has developed as a result of completing the project.	Yes	Yes	Yes	The candidate identifies clear and full details of the new knowledge and skills she/he has developed as a result of doing the project such as project management skills, investigation/research skills, keeping to deadlines, recognising limitations of knowledge — approaching expert sources.
21	Yes	None	Yes	Yes	Yes	The candidate introduces a significant novel feature into the project.



**Grading Checklist (cont)**

<b>No.</b>	<b>No Grade</b>	<b>Grade C Criteria</b>	<b>Grade C</b>	<b>Grade B</b>	<b>Grade A</b>	<b>Grade A Criteria</b>
22	Yes	The candidate demonstrates an acceptable level of motivation throughout the project.	Yes	Yes	Yes	The candidate demonstrates a high-level of self-motivation throughout the project.
23	Yes	None	Yes	Yes	Yes	The candidate undertakes additional research well beyond that demanded by the project.

## **Guidance on the Completion of the Grading Checklist**

Centre staff are asked to read the following guidance notes before completing the Grading Checklist.

The checklist had been designed to help assessor(s) decide what Grade should be awarded to a candidate completing the Mechanical Engineering Project. It will also be used by external moderators as part of the external moderation of project work.

### **A Grading Checklist form should be completed for each candidate who has been entered for the Mechanical Engineering: Graded Unit 2 (Mechanical Engineering Project)**

In completing the checklist, assessors should take note of the following points.

- 1 For each item shown in the checklist, the Yes should be circled which most closely reflects the candidate's performance. It can be seen from the checklist that grade criteria for Grade C and Grade A passes have been included in the checklist and items 14 and 16 are double weighted.
- 2 A Grade B should be awarded where a candidate's performance lies approximately mid-way between a Grade C and a Grade A (i.e. better than a Grade C (Competent) but not good enough to be a Grade A (Highly Competent)).
- 3 No grade should be awarded where a candidate's performance is not good enough to satisfy a Grade C Pass (i.e. a competent level of performance).
- 4 Once centre assessor(s) have completed the twenty three items, they should then apply their own professional judgement to decide what Grade to award the candidate.
- 5 In arriving at the grade, due account should be taken of the distribution circles around 'Yes'. For example, if 19 out of the 24 items have been circled 'Yes' under the Grade B column and the other 5 have been circled under the Grade C column, then it is likely that the assessor(s) will award the candidate a Grade B. Professional judgement is much more involved where, for example, if 'Yes' is circled 12 times under the Grade A column and 12 times under the Grade B column. The assessor's first hand knowledge of the candidate's performance will influence whether the candidate is awarded Grade A or Grade B. External moderators are unlikely to overturn the grading awarded by the Centre assessor(s) unless they are not happy that grading judgements have been awarded in a fair, consistent and rigorous manner.

Centres may provide additional comments and/or evidence in support of their grading decisions.

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

### Evidence Requirements

The project consists of three stages: planning; developing; and evaluating. The following table specifies the minimum evidence required to pass each stage.

**Note:** The candidate must achieve **all of the minimum evidence** specified below for each stage of the project in order to pass the Graded Unit.

Project Stage	Minimum Evidence Requirements
Stage 1 — Planning	<ul style="list-style-type: none"> <li>◆ A project brief identifying customer requirements</li> <li>◆ A project specification that the customer has agreed</li> <li>◆ A set of project objectives</li> <li>◆ A project schedule</li> <li>◆ Information about the different solutions</li> <li>◆ Justification of the chosen solution</li> <li>◆ Verification strategy</li> <li>◆ Maintenance of a log book</li> <li>◆ Complies with Health and Safety procedures</li> </ul> <p><i>The candidate must achieve all of the minimum evidence specified above in order to pass the Planning stage.</i></p>
Stage 2 — Developing	<ul style="list-style-type: none"> <li>◆ Practical output from the project (design, analysis, installation, investigation etc.)</li> <li>◆ Records of progress underpinning the project such as:               <ul style="list-style-type: none"> <li>— Log book</li> <li>— Progress reports</li> <li>— Test results or investigation findings as part of the verification strategy</li> </ul> </li> <li>◆ Complies with Health and Safety procedures</li> </ul> <p><i>The candidate must achieve all of the minimum evidence specified above in order to pass the Developing stage.</i></p>

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

Project Stage	Minimum Evidence Requirements
Stage 3 — Evaluating	<ul style="list-style-type: none"> <li>◆ Review of project specification as the project progresses</li> <li>◆ Review of project schedule as the project progresses</li> <li>◆ Analysis used to decide project option</li> <li>◆ Progress reporting and goal setting as part of project implementation</li> <li>◆ Actions taken to overcome unforeseen circumstances</li> <li>◆ Interpretation of test results or investigation findings</li> <li>◆ Action taken as a result of test results or investigation findings interpretation</li> <li>◆ An assessment of the strengths and weaknesses of the practical output of the project</li> <li>◆ An evaluation of the extent to which the project brief and objectives have been overtaken</li> <li>◆ Reflective part of presentation</li> <li>◆ Indication of any knowledge and skills which have been gained by the candidate</li> <li>◆ Complies with Health and Safety procedures</li> </ul> <p><i>The candidate must achieve all of the minimum evidence specified above in order to pass the Evaluating stage.</i></p>

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

### **Candidates with Additional Support Needs**

This Graded Unit specification is intended to ensure that there are no artificial barriers to learning or assessment. The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering special alternative assessment arrangements. For information on these, please refer to the SQA document *Guidance on Alternative Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs*, which is available on SQA's website: [www.sqa.org.uk](http://www.sqa.org.uk).