



Higher National Unit specification: general information

This Graded Unit has been validated as part of the HNC Computer Games Development. 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: Computer Games Development:
Graded Unit 1

Graded Unit code: H4L6 34

Type of Graded Unit: Project

Assessment Instrument: Practical Assignment

Publication date: July 2018

Source: Scottish Qualifications Authority

Version: 02

Unit purpose

This Graded Unit is designed to provide evidence that the learner has achieved the following principal aims of the HNC Computer Games Development:

- ◆ Prepare learners for employment in a junior developer role within the computer games industry or a junior software developer role within the IT industry generally.
- ◆ Develop a range of contemporary vocational skills relating to the development of computer games appropriate to employment at junior developer (or equivalent) level.
- ◆ Prepare learners for progression to further study in Computer Games Development or a related discipline.

Recommended prior knowledge and skills

It is recommended that the learner 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:

F8HC 34 *Structured Programming for Games*
DH35 34 *Computing: Planning*
DH21 34 *Working within a Project Team*

General information (cont)

Depending on the optional Units selected by the centre, the Knowledge and Skills contained in the following optional Units can also be utilised as part of this Graded Unit:

- F869 34 *3D level Editing*
- F209 34 *2D Animation*
- F1VV 34 *User Interface Design*
- F1YX 34 *Digital Imaging: Bitmap and Vector*

In addition, the following optional Units may provide valuable Knowledge and Skills for learners undertaking this Graded Unit:

- F88D 34 *Game Design: Pitch to Treatment*
- F871 35 *Artificial Intelligence and Critical Thinking*
- F86A 35 *Games Development: Object Oriented Programming*
- DE2N 35 *3D Modelling and Animation*

Credit points and level

1 Higher National Unit credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*)

**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 National 1 to Doctorates.*

Core Skills

Achievement of this Unit gives automatic certification of the following:

- | | |
|----------------------|--|
| Complete Core Skills | <i>Problem Solving at SCQF level 6</i> |
| | <i>Working with Others at SVQF level 5</i> |

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

Assessment

This Graded Unit will be assessed by the use of a games design and development practical assignment. The **game design and development** should provide the learner with the opportunity to produce evidence that demonstrates she/he has met the aims of the Units that it covers.

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Conditions of assessment

The learner should be given dates for the completion of each of the three stages of the games design and development project. However, the instructions for the assessment task should be distributed to allow the learner 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.

Reasonable assistance is the term used by SQA to describe the difference between providing learners with some direction to generate the required evidence for assessment and providing too much support, which would compromise the integrity of the assessment. Reasonable assistance is part of all learning and teaching processes. In relation to the assessment of Higher National Project-based Graded Units, assessors may provide advice, clarification, and guidance during the time between the distribution of the project instructions and the completion date, ie at each stage of the project.

As this is a group assignment, the assessor should meet the project teams regularly to discuss their progress through the stages and observe the conduct of group meetings.

Remediation allows an assessor to clarify learner responses, either by requiring a written amendment or by oral questioning, where there is a minor shortfall or omission in evidence requirements. In either case, such instances must be formally noted by the assessor, either in writing or recording, and be made available to the internal and external verifier. In relation to Higher National Project-based Graded Units, learners must be given the opportunity for remediation at each stage of the project.

At this level, although learners are working in a group, they should also work independently, ie without undue assistance from the assessor and contribute fully to the project. The project marking scheme is based on **each learner's individual submission**. It is up to centres to take reasonable steps to ensure that the project is the work of the learners and that each learner has contributed equally and fairly to the work of the group. For example, centres may wish to informally question learners 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 learner does not receive undue assistance.

If a learner is found to have plagiarised or to have gained an unfair advantage by other means, the centre should have in place procedures for dealing with this, including the authority to deem that the learner has failed the assessment. Learners should provide references in the form of footnotes and/or bibliography for any materials used and/or accessed which are not their own.

The evidence for a Higher National Project-based Graded Unit is generated over time and involves three distinct stages, each of which has to be achieved before the next is undertaken. This means that any re-assessment of stages must be undertaken before proceeding to the next stage. The overall grade is derived from the total number of marks across *all* sections, and should reflect the ability of the learner to work autonomously and

the amount of support required. In relation to Higher National Project-based Graded Units, learners who have failed any stage of the project and have been unable to provide the necessary evidence through remediation must be given the opportunity for re-assessment of that stage.

Instructions for designing the assessment task

The assessment task is a project. The project undertaken by the learner 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 learner

The assessment task must require the learner to:

- ◆ analyse the task and produce a proposed solution
- ◆ work effectively within a project team to decide a course of action for undertaking the project
- ◆ plan a solution for their task
- ◆ record discussions and decisions made at group meetings and evidence progress through action points and follow up records
- ◆ maintain a detailed personal logbook of activities and contributions made to the overall solution
- ◆ develop the product within the project team taking a fair share of responsibility for the work required to ensure the solution meets requirements
- ◆ reflect on the overall project, the product and the team effort and produce an evaluation of the process and Outcomes
- ◆ produce evidence of meeting the aims which this Group Award Graded Unit has been designed to cover

Instructions for writing the Project Brief (assignment task)

It is recommended that a project scenario is given out to each learner prior to starting this Unit to allow time to assimilate the details and requirements of the assessment. Teams should be allocated prior to starting the project to encourage learners to discuss the requirements of the project scenario and the implications for team working.

The project scenario should require each project team to produce a fully functional, small computer game using direct programming within a structured approach. The game should demonstrate knowledge and skills in the design process and the subsequent coding and would lend itself to a platformer, space invader, quiz, strategy or any other suitable genre. The project brief should give some guidance as to appropriate delivery platforms. Any assets used in the game that are not original work must show compliance with copyright law.

The assignment task should offer sufficient flexibility to allow each project team to produce their own unique response to the assignment and should give some guidance as to the appropriate delivery platforms, eg PC, console, mobile.

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

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There should be clear guidance to each learner on submission dates for each of the three stages of the project and a detailed marking scheme based on the minimum Evidence Requirements within the specification. Learners should be encouraged to work towards producing a professional standard of work both for documentation and the end product.

Example Brief

The district council has contacted the college and asked if the HNC Computer Games learners could produce a small computer game aimed at children under the age of 10. This will be used to promote healthy eating in schools. The game could be a quiz, a platformer or any other suitable genre and will be played on school PCs. A key requirement is that it is appropriate for use by this age group. It should be visually appealing and the subject matter should be compatible with aspects of healthy eating. This will be run as a competition and a panel will choose the best solution at the completion of the project. It is important that the game matches the requirements of the brief. The game should be developed using C# within a 10 week timescale. There are specific submission dates for sign-off of Planning, Development and Evaluation. These will be provided separately.

Guidance on grading learners

Learners 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 learner performance for this Graded Unit is specified in the following table.

Grade A	Grade C
<p>Is a seamless, coherent piece of work which:</p> <ul style="list-style-type: none"> ◆ has sufficient evidence for all three essential stages of the project, is produced to a high standard, and is clearly inter-related ◆ clearly demonstrates and records extensive collaboration, taking of responsibility and leadership ability ◆ is complete and demonstrates the learner's high level of understanding from each stage, ie Planning, Developing and Evaluating ◆ is an accurate interpretation of the Game Design Document and Technical Design Reference 	<p>Is a co-ordinated piece of work which:</p> <ul style="list-style-type: none"> ◆ has produced evidence for all three essential stages of the project and is produced to an adequate standard ◆ demonstrates and records collaboration and taking of responsibility ◆ is complete and demonstrates the learner's acceptable level of understanding from each stage, ie Planning, Developing and Evaluating ◆ is an adequate interpretation of the selected Game Treatment

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

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Grade A	Grade C
<ul style="list-style-type: none"> ◆ is clear and very well-structured throughout and the language used is of a uniformly high standard in terms of level, accuracy and technical content ◆ has an original concept linked to a strong visual identity and storyline ◆ has extensive gameplay that closely integrates complexity, challenge and reward systems ◆ effectively consolidates and integrates the required knowledge and skills ◆ demonstrates the learner's ability to work with minimum support or revision 	<ul style="list-style-type: none"> ◆ is satisfactorily structured and language used is adequate in terms of level, accuracy and technical content ◆ has a visual identity and storyline related to the game concept ◆ has a system of rewards relating to the challenges presented ◆ consolidates and integrates knowledge and skills but this may lack some continuity and consistency ◆ has required additional support and revision during project

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 learner for this Graded Unit based on the following grade boundaries.

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

Any learner who has failed their graded unit or wishes to upgrade their award must be given a re-assessment opportunity, or in exceptional circumstances, two re-assessment opportunities. In the case of project-based graded units, this must be done using a substantially different project.

The final grading given must reflect the quality of the learner's evidence at the time of the completion of the graded unit. Learners must be awarded the highest grade achieved — whether through first submission or through any re-assessment, remediation, and/or reasonable assistance provided.

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

The learner must achieve a minimum of:

- ◆ 50% of total marks for the Planning stage
- ◆ 50% of total marks for the Developing stage
- ◆ 50% of total marks for the Evaluating stage

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

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

The opportunity should be taken during scheduled meetings to use probing questions to authenticate the assessment material. Assessors must ensure that the learner is aware of their centre's plagiarism policy and ensure that submitted material is consistent with that policy. Further advice about plagiarism is available from SQA.

Project stage	Minimum Evidence Requirements
Stage 1 — Planning 20%	<p><i>The planning stage will contain individual and team based tasks. Each learner must evidence all aspects of planning through a Proposal Report, a Pre-production Report and an Individual Logbook. Within the pre-production report there will be documents that are common to all members of the team and will be produced through team discussions and collaboration. These documents should be referenced in each learner's portfolio along with evidence of their contribution through minutes of meetings and individual logbook entries. All other aspects should be investigated and evidenced on an individual basis.</i></p> <p>Proposal Report (10%)</p> <p>To include:</p> <ul style="list-style-type: none"> ◆ A one page 'pitch' document outlining their game idea ◆ Analysis of what is involved in the project — (influencing factors and how they relate). ◆ A proposed approach to dealing with the project (may be a formal development process, a hybrid or entirely new approach) with a justification of the above relating to resources, time, rejected approaches, etc.

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

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Project stage	Minimum Evidence Requirements
Stage 1 (cont)	<p>Pre-production Report (6%)</p> <p>To include:</p> <ul style="list-style-type: none"> ◆ Project Plan: <ul style="list-style-type: none"> — identification of component tasks and timescales — resource requirements (ie equipment, people, software) — research requirements (ie Sources of information/media) — role assignments within team (eg Lead Designer, Lead Programmer, Art) Lead) — management rules for team — communication strategy and meeting schedule — testing strategy ◆ Game description and treatment to include: <ul style="list-style-type: none"> — level Walkthroughs — Media requirements including audio — Game AI requirements (if relevant) ◆ Planning meeting minutes <p>Planning Logbook (4%)</p> <p>To include evidence of:</p> <ul style="list-style-type: none"> ◆ negotiation of project scope and requirements ◆ participation in design selection process ◆ negotiation of team members tasks and roles ◆ co-operative working
	<p><i>The learner must achieve all of the minimum evidence specified above in order to pass the Planning stage.</i></p>

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

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Project stage	Minimum Evidence Requirements
Stage 2 — Developing 60%	<p><i>Although the development stage will be completed as a team, each learner will be assessed individually taking account of their contribution to all aspects of the development stage. The evidence must clearly indicate the author of each aspect within design, development and testing and this should reflect the team roles allocated in the Planning Stage. In addition, learners should continue their Individual Logbook in order to evidence their individual contributions to the team. This is detailed in the ‘Development Logbook’ below.</i></p> <p>Game Design Document (10%)</p> <p>To include:</p> <ul style="list-style-type: none"> ◆ Detailed design documentation of the game level or component including storyboards and/or artwork; graphics to be included in the game such as backgrounds, buttons, sprites. ◆ Details of user interaction to progress gameplay. ◆ Descriptions of any/all objects, non-player characters, puzzles and traps annotated level concepts/layouts. ◆ A detailed multimedia catalogue (sprites, backgrounds, music, speech, sfx, etc). ◆ Pseudocode for any/all scripted events and behaviours. <p>Implementation (40%)</p> <p>To include:</p> <ul style="list-style-type: none"> ◆ Implementing the solution making effective use of development tools throughout. (32%) ◆ Testing the solution using the test plans to ensure any errors are rectified and that user expectations are met. Evidence of modifications made as a result of testing should be documented. (8%)

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

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Project stage	Minimum Evidence Requirements
Stage 2 (cont)	<p data-bbox="480 499 887 533">Development Logbook (10%)</p> <p data-bbox="480 566 783 600">To include evidence of:</p> <ul data-bbox="480 633 1161 835" style="list-style-type: none">◆ contribution to team tasks and decisions◆ co-operative working◆ creation of multimedia assets◆ contribution to program code◆ contribution to testing◆ contribution to game refinement and debugging <p data-bbox="480 869 1318 936"><i>The learner 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 learners (cont)

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Project stage	Minimum Evidence Requirements
<p>Stage 3 — Evaluating</p> <p>20%</p>	<p><i>The evaluation stage will be completed individually by the learner and should be in the form of an individual 'Evaluation Report' supplemented by a checklist completed by the tutor.</i></p> <p>Evidence of Problem Solving (10%):</p> <p>The evaluation should include:</p> <ul style="list-style-type: none"> ◆ An outline of the assignment and to what extent the solution meets the assignment brief. ◆ An analysis of the strengths and weaknesses of the outputs of the practical assignment. ◆ Reference to any unforeseen events and any modifications to the project plan during the course of the project. ◆ A summary of how effective the learner has been at problem solving throughout the course of the project, with justification of their conclusions from the evidence gathered. ◆ Recommendations as to how the process of carrying out the project could be improved in the future, with evidence to support/justify the conclusions drawn. <p>Evidence of Working with Others (10%)</p> <p>Reflection on:</p> <ul style="list-style-type: none"> ◆ Self: <ul style="list-style-type: none"> — describe their own contribution to the task analysis and planning — evaluate their effectiveness of the contribution to the negotiation of goals, roles and responsibilities during planning — reflect on their strengths and weaknesses of own contribution to the team activity during development with justification by example ◆ Team: <ul style="list-style-type: none"> — evaluate the team's ability to collaborate throughout planning and development — describe each team member's contribution to the project and evaluate their interpersonal effectiveness <p><i>The learner 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 learners (cont)

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Support notes

This project involves the learner working in a team to design and implement a working computer game, or part thereof. It is recommended that the team size should be between three and four members. Where possible, there should be a range of skills and abilities within each project team.

The game should reflect the knowledge and skills developed in the programming delivery of the HNC Computer Games Development course. The software tool used to create the game should be of a level that requires the learner to produce significant amounts of coding. Hence it would be appropriate to use a 'middleware' solution whereas it would be inappropriate for the learner to use low-level statements (such as DirectX function calls). An appropriate tool for creating the project would be a standard programming language, with additional graphics oriented abilities. Centres should provide a toolset that is representative of current industry development.

The learner will be required to:

- ◆ demonstrate the skills necessary to produce a full game level design and implement this design (or certain levels of this design) to create a working computer game.
- ◆ demonstrate the skills of working within a group to design, code and test a video game to meet the requirements of the project.
- ◆ demonstrate skills in Design, Content Creation and Programming.
- ◆ analyse the effectiveness of the response to the solution and provide a detailed evaluation.

The nature of the Graded Unit requires learners to work as part of a team (participating fully) as well as working individually. The Evidence Requirements have been designed to aid this process.

Each learner must submit an individual portfolio that covers all aspects of the project whether produced individually or as part of a team task.

Planning

In the planning stage, the individual production of the *Proposal Report* requires learners to develop a proposed game concept. Tutors should encourage learners to present their design to their team and discuss which design (or resulting hybrid) should be selected for development. This should occur in an early, minuted and observed team meeting.

During the production of the team Pre-production Report, teams should distribute team roles and responsibilities to ensure each learner is involved in all areas of the project, but has a lead role for some element. The obvious division would be dividing into Programming, Art and Design, and assigning one lead to each section. With teams of less or more than three members, other arrangements will have to be decided upon. Teams of more than four members are not recommended.

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Teams must decide upon a meeting schedule to be attended by the project team and the tutor. Weekly meetings are recommended but must be sufficient in number for each member of the team to take the roles of the meeting chair and minute secretary of at least one meeting.

Meetings arranged using online collaboration/communication tools are acceptable (and may be beneficial in distance learning scenarios) provided proper minutes are recorded during these meetings.

Assessors should note that actual physical evidence of team produced documents and items, does not have to appear in every individual learner's portfolio. This may be held centrally and individual contributions cross-referenced clearly from the learner portfolio.

Development

When grading the implementation of the working computer game, a number of factors should be considered, listed below:

- ◆ completed functionality including menu system and in game instructions/tutorial
- ◆ adherence to the stated requirements for the game
- ◆ complexity of the game
- ◆ visual impact
- ◆ originality of concept
- ◆ system of reward
- ◆ depth of gameplay
- ◆ appropriate challenge/difficulty

Evaluation

The Evaluation Stage (Stage 3) will involve the learner working individually and producing a detailed evaluation report, which would include peer evaluation.

Guidance on grading and marks allocation

Guidance on grading and marks allocation to assessors and use of marking schemes will be given in the supporting Exemplar/Assessment Support Pack for this Unit.

Equality and inclusion

This graded unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements

History of changes to Unit

Version	Description of change	Date
02	Update of Conditions of Assessment	24/07/18

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General information for learners

Graded Unit title: Computer Games Development: Graded Unit 1

This Unit has been designed to help you achieve the principal aims of the HNC Computer Games Development award and to assess your knowledge and skills relative to the mandatory subjects of the course framework:

F8HC 34 *Structured Programming for Games*
DH35 34 *Computing: Planning*
DH21 34 *Working within a Project Team*

and **at least one** of:

F869 34 *3D Level Editing*
F209 34 *2D Animation*
F1VV 34 *User Interface Design*

This will be achieved by the completion of a group-based project brief, allowing you to explore a range of solutions, arrive at an appropriate and effective resolution and communicate the solutions in an effective manner.

Over the course of this practical based Unit you will work in a small team through three stages. The marking and grading scheme is based on your individual contribution throughout the course of the project.

In the first stage, 'Planning', you will decide on a game prototype and then negotiate and plan how you will develop it as a team.

In stage two, 'Developing', your team will create the games design document as well as writing the programming code and creating the art and sound resources for the game itself. This will include testing procedures to ensure the game works correctly and meets requirements.

In the final stage, 'Evaluating', you will document your contribution to the project in terms of your ability to solve problems and work with the other members of your team. It is very important that you keep a record of your work throughout this project.

The Unit is graded individually (A–C) based on the quality of the work you have produced and your ability to work in a team.