Higher National Unit specification

General information

Unit title: Digital Graphics Fundamentals (SCQF level 7)

Unit code: HF3F 34

Superclass: CC

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Source: Scottish Qualifications Authority

Version: 01

Unit purpose

This Unit is designed to introduce learners to the production of images and graphics for use within a variety of digital applications. It will enable learners to explore digital imaging, screen based graphics, graphics software, acquisition and manipulation of digital still images and graphics. The learner will also be made aware of the importance of optimisation, compression and file types. The learner will use the relevant software to produce and implement a product to a given brief.

This Unit is suitable for learners who have gained some prior experience at the National Certificates level and for direct entrants to the High National Certificates level with little or no experience. On achieving this Unit learners can progress to other graphics and digital media Units.

Outcomes

On successful completion of the Unit the learner will be able to:

1 Demonstrate knowledge of the fundamentals of digital graphics.
2 Produce graphics using appropriate software and tools.
3 Prepare graphics for use in an application.

Credit points and level

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

Higher National Unit specification: General information (cont)

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Recommended entry to the Unit

Access to this Unit is at the discretion of the centre. Learners are required to have the relevant level of ICT skills to be able to cope with this level of Unit. An awareness of how to operate graphics software applications would be an advantage though not essential. It would be preferable that Learners have achieved a graphics related Unit at SCQF level 5 or 6 or have a similar level of experience.

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes for this Unit specification.

There is no automatic certification of Core Skills or Core Skill components in this Unit.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

The Assessment Support Pack (ASP) for this Unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable assessment. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard. A list of existing ASPs is available to download from SQA's website **(http://www.sqa.org.uk/sqa/46233.2769.html)**.

Equality and inclusion

This 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**.

Higher National Unit specification: Statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Learners should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Demonstrate knowledge of the fundamentals of digital graphics.

Knowledge and/or Skills

- Bitmap and vector graphics
- Sources and copyright
- File formats
- Optimisation

Outcome 2

Produce graphics using appropriate software and tools.

Knowledge and/or Skills

- Uses of graphics
- Acquisition of graphics
- Creation of graphics.
- Manipulation of graphics
- Graphics editing

Outcome 3

Prepare graphics for use in an application.

Knowledge and/or Skills

- Optimisation
- Implementation
- Evaluation

Higher National Unit specification: Statement of standards (cont)

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Evidence Requirements for this Unit

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills across all Outcomes.

The evidence for this Unit may be written or oral or a combination of these. Evidence may be captured, stored and presented in a range of media (including audio and video) and formats (analogue and digital). Particular consideration should be given to digital formats and the use of multimedia.

The Evidence Requirements for this Unit will take two forms:

1 Evidence of cognitive competence (Knowledge and Understanding) for Outcomes 1 and 2.
2 Evidence of practical competence (practical abilities) for Outcomes 2 and 3.

For Outcomes 1 and 2, candidates will be required to demonstrate that they will be able to:

- compare vector and bitmap graphics.
- identify sources of acquiring graphics and copyright restrictions eg creative commons, stock libraries.
- define the different graphic file formats that are suitable for particular delivery media such as print and screen, their attributes, advantages and disadvantages.
- describe optimisation, eg the need for compressing graphics, file sizes, lossy, lossless, balance between quality and quantity and artefacts caused by compressing graphics
- define the uses of graphics, eg screen — within websites, apps, animation and games, etc and print — posters, flyers, logos, etc.

Sampling is permissible when the evidence for cognitive competence is produced by a test of knowledge and understanding. The test may take any form (including oral) but must be supervised, unseen and timed. The contents of the test must sample broadly and proportionately from the contents of the knowledge domain (see above). Access to reference material is not appropriate for this type of assessment. If other methods of assessment are used, such as a report, open-book conditions must be applied. Refer to the assessment guidelines for further information.

For the practical competence in the Outcomes 2 and 3, learners will be required to carry out the following activities to produce and prepare graphics for use in an application, based on a given brief:

- Acquire at least one graphic, eg stock images, scan, photograph, creative commons sites
- Create a graphic using appropriate software, eg common tools, paint/vector tools, layers, masks, colour
- Manipulate a graphic using appropriate software, eg photo corrections/adjustments, image resolution, masks, channels, effects
- Edit a graphic using appropriate software, eg selection tools, cut/copy/paste, crop, resize

- Optimise graphics as appropriate for intended method of delivery: correct file formats, compression, resolution, colour mode and appropriate file size
- Save graphics in a format suitable for future editing
- Use suitable naming conventions for files
- Implement the graphics into the application. This can be a mock-up/prototype of the application
- Present and evaluate the end results
- Submit the files to the assessor

Evidence for practical competence may be produced over an extended period of time under open-book conditions; but where it is generated without supervision some means of authentication must be carried out.

The Guidelines on Approaches to Assessment (see the Support Notes section of this specification) provides specific examples of instruments of assessment.

Higher National Unit Support Notes

Unit title: Digital Graphics Fundamentals (SCQF level 7)

Unit Support Notes are offered as guidance and are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

The term 'graphics' used in this Unit also refers to images. The term 'application' refers to any digital publication such as a presentation, user interface, app, game, etc. The term 'tools' refers to all features of graphics software, not just the tool palette.

This Unit introduces learners to the fundamentals of graphics used in digital applications, ie websites, interactive media applications, 3D models, games, CAD. The nature of the Unit is such that it is used to demonstrate the use of graphics within different contexts. Learners should be made aware of current types in use, however, centres may opt to focus on one particular type of graphic for the practical Outcomes.

The aim of the Unit is to introduce learners to the different types of graphics (vector, bitmap), their purpose, creation and storage on supported media. Whilst the intention is not to teach creative design knowledge and skills there are likely to be opportunities for learners to develop these.

This is a largely practical Unit. It is recommended that learners use current industry standard dedicated graphics software — graphics tools in applications such as Microsoft Word are not acceptable for the purpose of this Unit. The software will depend on the context the Unit is being delivered in e.g producing 3D graphics for a game or 2D graphics for a website. At the time of writing, the examples of software application packages suitable for use in the delivery of this Unit include Adobe Photoshop, Illustrator, Corel PaintShop Pro, CorelDRAW, GIMP, www.pixlr.com. Current versions should be used if possible and Learners should be made aware of the transferable skills between versions.

It is recommended that the Unit focusses on one software application so that learners have the opportunity to spend more time exploring the application as opposed to have tasters of various applications. Two or more applications could be taught if there are other opportunities on the course for Learners to add more depth to their skills.

Outcome 1 covers the underpinning knowledge of the Unit. The purpose of this Outcome is to teach learners about the different types/categories of digital graphic currently used. This involves the differences between them, what they are best used for and their properties, ie for bitmaps pixels, image resolution, dpi, for vector, co-ordinates, lines, curves, non-resolution dependent. Learners should be made aware of the current common types of vector and bitmap.

Higher National Unit Support Notes (cont)

Unit title: Digital Graphics Fundamentals (SCQF level 7)

Whilst most learners are likely to already be familiar with how to acquire graphics using their mobile device or from the internet, the Outcome will teach them about legal ways to acquire graphics and copyright restrictions, eg creative commons, stock libraries, attribution, using professional photographers, and the implications breeching copyright can have on a project. It is not the purpose of the Unit to teach Learners about photography and how to be designers, however, it would be pertinent to demonstrate the difference between good and bad quality graphics, the impact these can have on an application and the advantages/ disadvantages of hiring professionals, ie resources, budget, time.

Common file formats and their use should include native file formats and editable versions, ie Photoshop PSD file format, and published versions such as JPEG. Other formats could include PNG, SVG, AI, Gif, TIFF, etc. There may be scope to introduce camera RAW files if bitmaps are going to be the focus of Outcome 2. Formats should focus on their attributes, advantages and disadvantages, support for the particular delivery platform/media, ie browser, operating system, printing. This would naturally lead onto file sizes and the need for compression.

Optimisation should focus on lossy and lossless compression, the balance between quality and file size and artefacts caused by compression.

Outcome 2 focusses on the production of graphics — acquiring them and using tools to create, manipulate and edit them. Examples of the tools learners should be taught are given in the Evidence Requirements:

- Create a graphic using appropriate software, eg common tools, paint/vector tools, layers, masks, colour
- Manipulate a graphic using appropriate software, eg photo corrections/adjustments, image resolution, masks, channels, effects
- Edit a graphic using appropriate software, eg selection tools, cut/copy/paste, crop, resize

These are not exhaustive. Other examples could include but are not limited to photo corrections such as cropping, adjusting the tonal range, saturation and brightness, basic repairs, filters, gradients, blend in corrections, blending modes for layers, colour modes, pros and cons of flattening layers, paint brushes, drawing tools, text tools, transformation tools. Some examples for Vector graphics are paths, fonts, effects, stroke/fill, images in vectors, rasterising files, workspace set up, shapes, 2D/3D, objects, artboards, curves, patterns and fills, styles, gradients, brushes, transforms, views, symbols, integration with other packages, slicing, svg, master layers, outlines, characters, templates, drawing techniques, tracing and duplication/mirroring,

Learners should be introduced to the interface of the application. They should be encouraged to use effective ways of working and conventions, eg keyboard shortcuts, smart objects, templates, libraries, history, naming layers, organised filing structure.

There may be scope to touch on preparing graphics for output to screen and print and colour management.

Higher National Unit Support Notes (cont)

Unit title: Digital Graphics Fundamentals (SCQF level 7)

Outcome 3 deals with the correct file formats for publishing and future editing. For example.PSD for editing and.jpeg for the published version to be included in the application stated in the brief. Learners will present and evaluate the quality of the finished product and software they used.

This Unit could be used for preparation for software vendor qualifications. Assessors would need to check with the vendor.

At the time of writing this Unit relates to *Tech Partnership — IT User Skills Standards* NOS (National Occupational Standards), particularly *Digital Applications* ESKITU060-63 and *Digital Content* ESKITU070-073. It also relates to elements of the *Creative Skillset —* Interactive Media and Computer Games Standards and Photo Imaging NOS.

Learners who complete this Unit will be ready to study xxxx xx *Digital Imaging: Bitmap Techniques* and xxxx xx *Digital Imaging: Vector Techniques* and possibly similar Units at SQCF level 8.

Guidance on approaches to delivery of this Unit

It is intended that Outcome 1 is taught in tandem with the practical activities for Outcomes 2 and 3. This can help learners to better understand the knowledge covered in Outcome 1 and how it is applied. It is for this reason that it may be better to assess Outcome 1 towards the end of the Unit.

Outcome 2 should be delivered before Outcome 3, however, again there are opportunities to teach these in tandem.

As this is a largely practical Unit individual formative exercises using the chosen software application(s) should be used for most lessons. It is recommended that these are supported by demonstrations. Where lectures are used for Outcome 1 these could be interspersed with class activities and group work to help reinforce learning and cut down on lengthy lectures with no interaction.

Video tutorials could also be used as an alternative to traditional formats, as many learners currently seem to prefer this format when doing their own research. Tutorials should however, be provided for Learners from reputable resources and professionals such as Lynda.com and Adobe. Lessons should therefore not rely on YouTube tutorials from amateurs.

There may be scope for team exercises to help with knowledge elements of Outcome 1.

Other activities could include guest lectures and field trips. The approaches used should be varied and appropriate to the aims of the Unit and encourage a learner-centred, participative and practical approach. Learners should also be given the opportunity to extend their skills where possible.

Higher National Unit Support Notes (cont)

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The suggested delivery schedule is:

- 10 hours Outcome 1 including formative assessment
- 26 hours split between Outcomes 2 and 3 including formative assessment
- 4 hours summative assessment

Fundamentals have to be the focus as some entrants will be direct and have no experience, however, where there is duplication for NC students there should be enough scope to extend their knowledge and skills. It would be useful to tell these learners at the start of the Unit about the new Knowledge and Skills they are going to cover.

Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to candidates.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where candidates experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

Outcome 1 is a cognitive assessment. It is recommended that Questioning using multiple choice/response questions is the method of assessment used for this Outcome. This is the best and most appropriate method for this Outcome. A cut off score of 60% is also recommended. At the time of writing this is the standard cut off score recommended by SQA. Please refer to SQA for any changes to this. If this method is used the assessment should be closed-book. The recommended conditions would be 1 hour for 20 questions.

Another option that could be considered is an extended response in the form of a report or presentation. This would be an open-book assessment. The recommended time would be 3 hours.

Outcome 2 requires knowledge and skills to both be assessed. Cognitive assessment is required for the following Evidence Requirement:

- Define the uses of graphics, eg screen - within websites, apps, animation and games, etc and print — posters, flyers, logos, etc.

This can be integrated with the assessment for Outcome 1.

The other Evidence Requirements for Outcome 2 are practical in nature. They have to be assessed with Outcome 3 as one integrated task in supervised and unsupervised conditions. It is recommended that the method of assessment is a practical activity. Another method which could be considered suitable depending on the context/approach of delivery of the Unit is a portfolio. The evaluation of the end product could be a brief report (eg 300 words) or presentation (eg 2 minutes) where the focus is on the quality and process.

If a portfolio is being produced, naturally occurring evidence can start to be gathered early on in the Unit after candidates have carried out sufficient formative exercises to demonstrate that they can select and use the correct tool/feature of the software. It is recommended though that a final piece of evidence produced in a summative assessment to a given brief is produced to demonstrate how the candidates can apply the skills attained during the Unit. This final piece of work would only need to include a sample of some of the Evidence Requirements and those not already achieved earlier.

Whatever method is used instruments of assessment must be valid. More information about this and the methods of assessment recommended are detailed in the *SQA Guide to Assessment, AA4147 (July 2015)*

http://www.sqa.org.uk/files_ccc/25GuideToAssessment.pdf. Please refer to this before deciding which methods you want to use.

Assessors should also refer to *Coursework Authenticity — A Guide for Teachers and Lecturers* http://www.sqa.org.uk/files_ccc/CourseworkAuthenticityAug09.pdf (at the time of writing BA5188 (August 2009)).

Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at **www.sqa.org.uk/e-assessment**.

Opportunities for developing Core and other essential skills

There are various opportunities to develop *Information and Communication Technology (ICT)*, *Problem Solving* and *Communication* skills throughout the teaching and assessment of this Unit. Opportunities may also exist to develop *Working with Others* if any team exercises are used as part of the formative exercises. In broader skills in the areas of enterprise, employability, sustainable development and citizenship could be developed if learners were using real clients or topical issues for the practical assessment.

History of changes to Unit

Version	Description of change	Date

General information for learners

Unit title: Digital Graphics Fundamentals (SCQF level 7)

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

This Unit is designed to introduce you to the production of images and graphics for use within a variety of digital applications. It will enable you to explore digital imaging, screen based graphics, graphics software, acquisition and manipulation of digital still images and graphics. You will also be made aware of the importance of optimisation, compression and file types. You will use the relevant software to produce and implement a product to a given brief.

This Unit is suitable for learners who have gained some prior experience at the National Certificates level and for direct entrants to the Higher National Certificates level with little or no experience. On achieving this Unit you can progress to other graphics and digital media Units.

You may have two assessments for this Unit. One for Outcome 1 which will assess your knowledge and a combined practical assessment for Outcomes 2 and 3.

There are various opportunities to develop the *ICT, Problem Solving* and *Communication* Core Skills throughout the teaching and assessment of this Unit. Opportunities may also exist to develop the *Working with Others* Core Skill if any team exercises are used as part of the formative exercises. In broader skills in the areas of enterprise, employability, sustainable development and citizenship could be developed if learners were using real clients or topical issues for the practical assessment.

At the time of writing this Unit relates to *Tech Partnership — IT User Skills Standards* NOS (National Occupational Standards), particularly *Digital Applications* ESKITU060-63 and *Digital Content* ESKITU070-073. It also relates to elements of the *Creative Skillset* — Interactive Media and Computer Games Standards and Photo Imaging NOS.