GRAPHIC COMMUNICATION
Advanced Higher

Third edition – published June 2009

NOTE OF CHANGES TO ADVANCED HIGHER ARRANGEMENTS THIRD EDITION PUBLISHED JUNE 2009

COURSE TITLE: Graphic Communication (Advanced Higher)

COURSE NUMBER: C033 13

National Course Specification:

Course Details: The alterations to the content tables of this Arrangements document are not additions or removals of content but a clarification of what is already in place that provides more detail of what should be taught/ learned in this Course.

National Unit Specification:

D175 13
Computer-Aided 3D Modelling   The term 'design features' has been corrected to read as
- Visualisation and Presentation   'design elements and principles'

D177 13
Computer-Aided Graphic Presentation   The term 'design features' has been corrected to read as
                                       'design elements and principles'

National Course Specification

GRAPHIC COMMUNICATION (ADVANCED HIGHER)

COURSE NUMBER   C033 13

COURSE STRUCTURE

This course has three mandatory units as follows:

D33P 13	*Technical Graphics (AH)*	*0.5 credit (20 hours)*
D175 13	*Computer-Aided 3D Modelling Visualisation and Presentation (AH)*	*1.5 credit (60 hours)*
D177 13	*Computer-Aided Graphic Presentation (AH)*	*1 credit (40 hours)*

All courses include 40 hours over and above the 120 hours for the component units. This may be used for induction, extending the range of learning and teaching approaches, support, consolidation, integration of learning and preparation for external assessment.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained Higher Graphic Communication at grade A or B.

CORE SKILLS

This course gives automatic certification of the following:

Complete core skills for the course   IT   H

Additional core skills components for the course   None

For information about the automatic certification of core skills for any individual unit in this course, please refer to the general information section at the beginning of the unit.

Administrative Information

Additional information about core skills is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, 1999).

National Course Specification: course details

COURSE   Graphic Communication (Advanced Higher)

RATIONALE

Visual communication has been revolutionised by advances in computer graphics, output devices and reproduction techniques. The rate of development of new techniques, more powerful hardware and more easily used software is increasing and this will continue. A course concerned with graphic communication at this level must recognise these advances and be flexible enough to accommodate future developments. It is also very important that candidates understand the principles of geometry and develop the spatial thinking and visual literacy which comes from the production of drawings involving the manipulation of lines and planes.

The course must also attempt to relate this knowledge to industrial and commercial practices and to consider the wider social and economic implications of technological advancement. An awareness of the ways in which visual communication caters for different needs will help to give candidates an understanding of the methods used to inform, influence, sell, entertain and affect feelings.

The course aims to allow candidates to develop both manual and computer graphic skills and understanding beyond those involved in Higher Graphic Communication. This will provide the candidate with an insight into the way in which information presented graphically is an integral part of communication throughout business and industry as well as in the consumer environment. Experience will be gained of evaluating the effectiveness of visual communication that will enable the candidate to apply principles of composition in the production of a computer produced presentation.

Where facilities are available for the use of presentation media, such as on-screen presentations, candidates should be allowed to utilise these facilities.

Candidates undertaking this course will extend their knowledge and understanding of geometric constructions in the generation of orthographic drawings, 2-point measured perspective drawings, CAD, CAG and general visual literacy in an industrial and commercial context.

The course should fulfil the following aims:

- develop aspects of technological capability
- develop technological creativity in relation to selecting information and evaluating its appropriateness for graphic communication
- develop technological confidence and an ability to analyse, process and present information in a graphic presentation
- develop a technological perspective on the role of graphic communication in an industrial context
- develop an ability to communicate graphical information using computer graphic skills and techniques
- develop a knowledge of appropriate computer hardware and modelling software for graphic communication and its related industrial applications
- develop spatial thinking and visual literacy

National Course Specification: course details (cont)

COURSE   Graphic Communication (Advanced Higher)

COURSE CONTENT

All of the course content will be subject to sampling in the external assessment.

Summary of the course outcomes

Technical Graphics (AH)
1.   Apply manual techniques of geometric constructions to produce orthographic drawings.
2.   Apply manual techniques of 2-point measured perspective to architectural settings.

Computer-Aided 3D Modelling Visualisation and Presentation (AH)
1.   Create 3D Computer-Aided Design surface models.
2.   Create 3D Computer-Aided Design solid models.
3.   Produce Computer-Aided drawings from a 3D Computer-Aided Design model.
4.   Produce Computer-Aided rendered images from 3D Computer-Aided Design model.

Computer-Aided Graphic Presentation (AH)
1.   Evaluate the application of design principles in professional graphics presentations.
2.   Design and produce a professional Graphic Presentation for a client group.
3.   Desktop Publishing characteristics are identified and their functions described correctly.

CONTENT TECHNICAL GRAPHICS	OUTCOME	NOTES
Geometric construction and orthographic drawing.	O1	Auxilliary views not required other than true shapes
Interpenetration and intersection of right prisms and cylinders on more than one plane.		Right prisms, triangular and square. This should be taught in the context of real examples and not limited to one plane.
Transition		This should be limited to the transition of cylinder to cuboid.
Conic sections		To include circle, ellipse, hyperbola and parabola. True shape and development to be constructed. Transitions are to be square to the horizontal.
Oblique cones		True shape and developments to be constructed. Radial line method should be used.
Measured perspective	O2	Drawing in 2-point measured perspective. Construction using the projection plan method. Subject matter to contain circles and/or arcs. Views to include both interior and exterior views.

COURSE   Graphic Communication (Advanced Higher)

COMPUTER-AIDED 3D MODELLING, VISUALISATION AND PRESENTATION	OUTCOME	NOTES
Create CAD surface models	O1	For a given criteria candidates must produce regular and irregular shaped surfaces using the specified techniques - this could be a component or an assembly. The candidates must have a clear understanding of Boolean operations and apply them to create surface models. The techniques to be used must include:- thickness, ruled surface, revolved surface and edged defined surface. Boolean operations:- union, subtraction and intersection. The candidate would be expected to display multiple 3D views of a CAD model on screen simultaneously. Appropriate co-ordinate systems are created for the purpose of creating a 3D model to a given specification. A minimum of three different views should be visible from: - front, top, left or right and a 3D view. Note: many of the CAD commands, above, are from a specific package and can be interchanged with equivalent commands from the package that is being used.
Create CAD solid models	O2	For a given criteria candidates must produce solid models using specified techniques and primitives- this could be a component or an assembly. The candidates must have a clear understanding of Boolean operations and apply them to create solid models. Candidates should be able to modify solid models using specified techniques to given criteria. Techniques to include revolution and extrusion by:- height, taper and path. The primitives that the candidates will be expected to work with are:- box, wedge, cone, sphere, cylinder and torus. Boolean operations;- union, subtraction and intersection. The techniques employed will be chamfer and fillet.

COURSE   Graphic Communication (Advanced Higher)

COMPUTER-AIDED 3D MODELLING, VISUALISATION AND PRESENTATION CONTENT	OUTCOME	NOTES
Produce drawings from a 3D CAD model.	O3	To a given specification candidates print multiple views of a 3D model on a single piece of paper – this could be a component or an assembly. The use of hidden line removal should be evident. A minimum of one sectional view and a pictorial view of a 3D CAD model including dimensions. Both surface and solid modelling should be represented. The three views from:- front, top, left and a 3D must be accurate with regard to dimensions and scale.
Produce rendered images from 3D CAD models	O4	The candidates should be able to create perspective views of a 3D CAD model, attach the appropriate materials, alter the light settings and render a suitable scene for the 3D CAD model. A minimum of two appropriate materials should be attached to the 3D model and the lighting used could include distant, spotlight or ambient. Additionally the model should be assembled in an appropriate environment and the intensity of the lights could be considered as could the use of mirrors/reflections.
COMPUTER-AIDED GRAPHIC PRESENTATION (AH) CONTENT	OUTCOME	NOTES
Knowledge and understanding of design principles within a professional graphic presentation.	O1	Candidates to be presented with set assignments to test their ability to identify the application of design principles (balance, proportion, white space, contrast, rhythm, alignment, proximity /unity), design elements (line, size, colour, mass/weight, texture, shapes, value) and balance(symmetrical ie line of symmetry being drawn, asymmetrical, radial. The candidates to collect two examples of different styles of a specific type of publication, annotate the examples to show how the design principles have been applied. The above to be annotated in terms of:- Margins, Typefaces, White space, Graphic placement, Headlines, Sub-headlines, Rules,

		Colours, Captions, and Fillers. Suggested types of publications and WWW pages for analysis, newsletters, company reports, related WWW pages that are appropriate and of interest to the candidate. The teacher/lecturer could direct candidates, issue a hard copy or allow the candidate to select their own depending on the resources available.

COURSE   Graphic Communication (Advanced Higher)

COMPUTER-AIDED GRAPHIC PRESENTATION (AH) CONTENT	OUTCOME	NOTES
Produce a professional Graphic Presentation *To design, plan and produce a Graphic Presentation in the form of an issue of a magazine or journal.*	O2	Candidates should select a topic or focus for their Graphic Presentation and evaluate the market including the competition. The candidate is to produce evidence of design, planning and production relative to the Performance Criteria that shows a selection of the following: • thumbnail sketches • rough draft of overall layout • the number of articles and the article length • associated graphics, photograph, 3 dimensional graphic, charts, etc • preparation of text for:- Headlines, sub headlines and captions • preparation and saving of graphic items, one scanner graphic, one imported graphic and simple graphics generated by the candidate • master formats, layout and design including gridding • text formatting • text file placement including text flows • graphic file placement • presentation of draft copy • final presentation incorporating modifications (although this is not a definitive/restrictive list Candidates are advised to ensure that the typefaces selected fall into three main groups: serifs, sans serifs and script. Ensure that text is displayed in upper case, lower case, 'x' height, serif, ascender, descender, mean line and base line. It should be ensured that there is an appropriate relationship between the font sizes used and point leading and kerning. As a guide the Graphic presentation should comprise of four sides of A5 or A4 depending on the topic or focus of the presentation. Candidates should produce the text relevant to publication this text can be sourced from CD-ROM, internet if appropriate.

COURSE   Graphic Communication (Advanced Higher)

COMPUTER-AIDED GRAPHIC PRESENTATION (AH) CONTENT	OUTCOME	NOTES
Desktop publishing terminology and printing terms. Higher terminology in italics.	O3	Candidate will be required to show a clear understanding of the DTP terminology already used at Higher plus the additional terms listed forming a restricted list. *Columns, rules, margins, captions, headers, footers, gutters, boxes, reverses, page orientation,* handles, font, alignment, justified, document layout, 'master' page, indent, text run-around, headline, sub-headline, running headline, orphan, OCR, bleed, file formats, typography (ie how the choice of font affects the outcome). Candidate will be required to show an understanding of the use of the basic terms, within a restricted list, used in the printing industry. Quality, number of colours, print size, medium to print to, offset lithography, flexography, screen printing, laserjet, inkjet, Colours-Pantone, CMYK,RGB; spot colour, two colour crop marks and registration. Photo-reduction, camera-ready copy, paper weight, paper opacity, calendaring, File formats-.jpg, .gif, .tiff, .bmp.

ASSESSMENT

To gain the award of the course, the candidate must pass all the unit assessments as well as the external assessment. External assessment will provide the basis for grading attainment in the course award.

When the units are taken as component parts of a course, candidates will have the opportunity to achieve a level beyond that required to attain each of the unit outcomes. This attainment may, where appropriate, be recorded and used to contribute towards course estimates, and to provide evidence for appeals. Additional details are provided where appropriate. Further information on the key principles of assessment are provided in the papers *Guide to Assessment and Quality Assurance: For Secondary Schools*; *For Colleges of Further Education* (1999) and *Guidance on Generating Evidence for National Course Estimates and Assessment Aspects* (March 2000).

In addition to the satisfactory achievement of the constituent units, to gain the course award in Advanced Higher Graphic Communication, candidates will be externally assessed by:

- an examination paper
- a Computer-Aided 3D Modelling Folio – covering a prescribed sample of 3D modelling
- a Computer-Aided Graphic Presentation
- The Folio and the Presentation will be internally assessed and externally moderated

National Course Specification: course details (cont)

COURSE   Graphic Communication (Advanced Higher)

DETAILS OF THE INSTRUMENTS FOR EXTERNAL ASSESSMENT

To gain the award of the course, a candidate must achieve all the component units of the course as well as the external assessment. External Assessment will provide the basis for grading attainment in the course award. The external instruments of assessment for the course are:

Part 1

Examination   3 hours

Section A Graphic Knowledge
This section will contain short response questions testing knowledge and understanding of 3D modelling, desktop publishing terminology, basic printing terms and other aspects of the course content.

Section B Graphic Abilities
This section will contain formal drawing questions on geometric construction in the generation of orthographic drawings, measured 2-point perspective, and will sample from a range of abilities developed during the course.

Part 2

Computer-Aided 3D Modelling Folio

Additional work for this aspect can be tackled within the time allocated for preparation for course assessment (8-10 hours maximum).

In tackling the course, the candidate will produce a range of graphic items which have been computer-produced. This will provide evidence for the internal assessment of some of the outcomes of the course. Items produced for the units can be selected for inclusion in a Computer-aided 3D Modelling Folio. Additional work for this aspect can be tackled within the time allocated for preparation for course assessment. Candidate 3D modelling files should also be retained for moderation purposes.

The main purpose of the folio is to offer an opportunity for the candidate to show a collection of high quality work, within a prescribed range, for presentation to an external client.

The selection of work, within the prescribed range, will address a representative range of 3D solid modelling drawings, surface and solid, which demonstrate techniques such as the use of composite models, rendering and presentation.

Part 3

Computer-Aided Graphic Presentation

The main purpose of the Graphic Presentation is to offer opportunity for the candidate to develop and apply analytical principles that may be used as a critical discipline for effective visual communication.

National Course Specification: course details (cont)

COURSE   Graphic Communication (Advanced Higher)

The structure of the Graphic Presentation will embrace:

- project management - effective planning of a strategy for undertaking the assignment
- preparation of a brief from the given information - analysis and processing of given data
- market research - identification of market segmentation and potential client group
- specification - identification of relevant knowledge and concepts to be developed
- the creation of a professional presentation item

Summary of marks for course assessment:

External assessment by examination paper	40%
External moderation of Computer-Aided 3D Modelling Folio	30%
External moderation of Computer-Aided Graphic Presentation	30%

Visiting moderation will be used to externally moderate the Computer-Aided 3D Modelling Folio and the Computer-Aided Graphics Presentation.

GRADE DESCRIPTIONS

The grade of award A, B or C will be based on the total score obtained from the three elements of external course assessment. The descriptions below indicate the nature of the achievement which is required for the award of a Grade C and Grade A in the course assessment.

For performance at Grade C, the candidates should be able to:

- use appropriate graphic knowledge and skills, which have been acquired through study of the Advanced Higher course, to express ideas graphically
- demonstrate good graphic abilities in manual and computer-aided graphics to illustrate a range of geometric, measured perspective, surface and solid modelling techniques
- apply knowledge and skills in planning and presenting a quality graphic presentation

For performance at Grade A, the candidates should be able to:

- use a wide range of appropriate graphic knowledge and a high level of skills, which have been acquired and developed through study of the Advanced Higher course, to clearly express ideas graphically
- demonstrate advanced graphic abilities in manual and computer-aided graphics to illustrate a wide range of geometric, measured perspective, surface and solid modelling techniques
- apply knowledge and skills in planning and presenting a Graphic Presentation of excellent quality

APPROACHES TO LEARNING AND TEACHING

Where appropriate, arrangements should be made to ensure that there will be no artificial barriers to learning and assessment. The nature of a candidate's special needs should be taken into account when

planning learning experiences and selecting assessment instruments. Alternative arrangements can be made as necessary.

National Course Specification: course details (cont)

COURSE   Graphic Communication (Advanced Higher)

Detailed guides give further advice and information on:

- support materials for each course
- appropriate learning and teaching approaches
- core skills as they relate to the subject
- assessment
- ensuring appropriate access for candidates with special educational needs

Computer graphics may require course and resource management to facilitate adequate access to Information Technology. Candidates should be made aware of the best industrial and commercial practice in computer graphics by the use of video and through industrial visits. Candidates should be encouraged to use the Internet, CD-ROMS, local networks and to download text and graphics. Candidates are encouraged to use databases to gather information for their assignments.

Some of the additional course time should be allocated for induction to the course and preparation for external assessment, which should include preparing the Graphic Presentation.

Strategies and techniques for time limit assessments, such as examinations, are important and should be included as part of the preparation.

SPECIAL NEEDS

This course specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment and Certification Arrangements for Candidates with Special Needs/Candidates whose First Language is not English* (SQA, 1998).

National Course Specification: course details (cont)

COURSE   Graphic Communication (Advanced Higher)

SUBJECT GUIDES

A Subject Guide to accompany the Arrangements documents has been produced by the Higher Still Development Unit (HSDU) in partnership with the Scottish Consultative Council on the Curriculum (SCCC) and Scottish Further Education Unit (SFEU). The Guide provides further advice and information about:

- support materials for each course
- learning and teaching approaches in addition to the information provided in the Arrangements document
- assessment
- ensuring appropriate access for candidates with special educational needs

The Subject Guide is intended to support the information contained in the Arrangements document. The SQA Arrangements documents contain the standards against which candidates are assessed.

National Unit Specification: general information

UNIT   Technical Graphics (Advanced Higher)

NUMBER   D33P 13

COURSE   Graphic Communication (Advanced Higher)

SUMMARY

The purpose of the unit is to further develop manual skills in 2-point measured perspective and geometric constructions used in the generation of orthographic drawings.

OUTCOMES

1   Apply manual techniques of geometric constructions to produce orthographic drawings.
2   Apply manual techniques of 2-point measured perspective to architectural settings.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained Higher Graphic Communication at grade A or B, or relevant experience in manual or computer-aided draughting.

CREDIT VALUE

0.5 credit at Advanced Higher.

National Unit Specification: general information (cont)

UNIT   Technical Graphics (Advanced Higher)

CORE SKILLS

There is no automatic certification of core skills or core skills components in this unit.

Additional information about core skills is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, 1999).

National Unit Specification: statement of standards

UNIT Technical Graphics (Advanced Higher)

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 the Scottish Qualifications Authority.

OUTCOME 1

Apply manual techniques of geometric constructions to produce the orthographic drawings.

Performance criteria

(a)   Constructions are used effectively to produce drawings of curves of intersection and transition.
(b)   Constructions are used effectively to produce drawings of conical curves of intersection.
(c)   Constructions are used effectively to produce drawings of true shapes and developments of oblique cones.

Evidence requirements

Graphical evidence that the candidate can apply manual techniques of geometric construction in the generation of orthographic drawings, as detailed in PCs (a) to (c).

OUTCOME 2

Apply manual techniques of 2-point measured perspective to architectural settings.

Performance criteria

(a)   The application of the 'measured-plan' method of 2-point measured perspective of room interiors is correct and accurate.
(b)   The application of the 'measured-plan' method of 2-point measured perspective of exterior buildings is correct and accurate.

Evidence requirements

Graphical evidence that the candidate can apply manual techniques of 2-point measured perspective as detailed in PCs (a) and (b).

National Unit Specification: support notes

UNIT Technical Graphics (Advanced Higher)

This part of the unit specification is offered as guidance. The support notes are not mandatory.

While the time allocated to this unit is at the discretion of the centre, the notional design length is 20 hours.

GUIDANCE ON CONTENT AND CONTEXT FOR THIS UNIT

The candidate should achieve a level of competence and skill in a range of graphic communication techniques that could be applied in an industrial or commercial context.

This unit will build on Higher Graphic Communication skills in 2-point measured perspective and geometric constructions used in the generation of orthographic drawings. The use of dimensions, tolerances and conventions should be in accordance with the latest British Standards.

'2-Point Measured Perspective' should be taught in the context of real examples from within the construction industry. To distinguish the Advanced Higher from the Higher level, 2-point measured perspective will contain examples from: circles, point circles, elipses, part elipses and curves.

Geometry should be taught in the context of real examples and should not be limited to single plane configurations. Geometric forms should be confined to: right prisms (triangular and square), cylinders, conic sections (circle, ellipse, hyperbola and parabola) and oblique cones.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Work should be integrated to cover more than one topic, to create natural progression through the unit.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

National Assessment Bank materials have been created specifically to assess knowledge and understanding for each outcome. Assessments can take place either at the completion of an outcome or as an end test.

Examples of instruments of assessment which could be used are as follows:

A series of drawing exercises could be used to gather evidence of geometric constructions, mainly by production of manual orthographic drawing examples from real situations where possible.

A series of drawing exercises could be used to gather evidence of interior and/or exterior 2-point measured perspective examples.

SPECIAL NEEDS

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment and Certification Arrangements for Candidates with Special Needs/Candidates whose First Language is not English* (SQA, 1998).

National Unit Specification: general information

UNIT   Computer-Aided 3D Modelling, Visualisation and
            Presentation (Advanced Higher)

NUMBER   D175 13

COURSE   Graphic Communication (Advanced Higher)

SUMMARY

The purpose of the unit is to develop computer-aided graphic skills to produce 3D surface and solid models.

OUTCOMES

1   Create 3D Computer-Aided Design surface models.
2   Create 3D Computer-Aided Design solid models.
3   Produce Computer-Aided drawings from a 3D Computer-Aided Solid model.
4   Produce Computer-Aided rendered images from 3D Computer-Aided Design model.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained Higher Graphic Communication at grade A or B, or relevant experience in computer-aided draughting.

CREDIT VALUE

1.5 credit at Advanced Higher.

Additional copies of this unit specification can be purchased from the Scottish Qualifications Authority. The cost for each unit specification is £2.50 (minimum order £5).

National Unit Specification: general information (cont)

UNIT Computer-Aided 3D Modelling, Visualisation and Presentation
(Advanced Higher)

CORE SKILLS

There is no automatic certification of core skills or core skills components in this unit.

Additional information about core skills is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, 1999).

National Unit Specification: statement of standards

UNIT Computer-Aided 3D Modelling, Visualisation and Presentation
(Advanced Higher)

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 the Scottish Qualifications Authority.

OUTCOME 1

Create 3D Computer-Aided Design surface models.

Performance criteria

(a)   3D models are produced using appropriate techniques to meet given specifications.
(b)   Irregular shaped surfaces are created to meet given specifications.
(c)   Surfaces are created using Boolean operations.
(d)   Multiple views of a 3D CAD model are simultaneously displayed.
(e)   Co-ordinate systems are created for producing 3D CAD models.

Evidence requirements

Graphical evidence that the candidate can create surface models as detailed in PCs (a) to (e).

Note on range for the outcome

a)   Techniques: thickness; ruled surface; revolved surface and edge defined surface.
b)   Boolean operations: union; subtraction and intersection.

OUTCOME 2

Create 3D Computer-Aided Design solid models.

Performance criteria

(a)   3D models are produced using appropriate techniques to meet given specification.
(b)   3D models are created using specified primitives to meet given specification.
(c)   3D models are created using Boolean operations to meet given specification.
(d)   3D models are modified through specified techniques to meet given specification.

Evidence requirements

Graphical evidence that the candidate can create solid models as detailed in PCs (a) to (d).

Note on range for the outcome

a)   Appropriate techniques: revolution; extrusion.
b)   Primitives: box; wedge; cone; sphere; cylinder and torus.
c)   Boolean operations: union; subtraction and intersection.
d)   Specified techniques: chamfer; fillet.

National Unit Specification: statement of standards (cont)

UNIT Computer-Aided 3D Modelling, Visualisation and Presentation
(Advanced Higher)

OUTCOME 3

Produce Computer-Aided drawings from a 3D Computer-Aided Solid model.

Performance criteria
(a)   Multiple views of a 3D CAD model are created to a given specification.
(b)   Representations of a 3D CAD model are created with hidden lines removed.
(c)   A sectional view of a 3D Solid CAD model is created.
(d)   Multiple views of a 3D CAD model including dimensions, are generated.
(e)   Hard copies of presentations are produced to a given specification.

Evidence requirements
Graphical evidence that the candidate can generate and present 3D CAD drawings as detailed in PCs (a) to (e).

OUTCOME 4

Produce Computer-Aided rendered images from 3D Computer-Aided Design model.

Performance criteria
(a)   Perspective views of a 3D CAD model are created.
(b)   Attach materials to a 3D CAD model.
(c)   Lights are applied to a 3D CAD model.
(d)   The scene environment into which a 3D CAD model is placed is effectively rendered.

Evidence requirements
Evidence that the candidate can produce rendered images from CAD 3D models as detailed in PCs (a) to (d).

National Unit Specification: support notes

UNIT Computer-Aided 3D Modelling, Visualisation and Presentation
(Advanced Higher)

This part of the unit specification is offered as guidance. The support notes are not mandatory.

While the time allocated to this unit is at the discretion of the centre, the notional design length is 60 hours.

GUIDANCE ON CONTENT AND CONTEXT FOR THIS UNIT

The level of competence and skill in 3D modelling techniques should reflect industrial or commercial practice.

Use should be made of 3D entities with X, Y and Z co-ordinates.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Work should be integrated to cover more than one topic, to create a natural progression through the unit.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

National Assessment Bank materials have been created specifically to assess knowledge and understanding for each outcome. Assessments can take place either at the completion of an outcome or as an end test.

Examples of instruments of assessment which could be used are as follows.

Outcome 1

A series of drawings incorporating basic, swept and edge primitives should be used to gather evidence for all the performance criteria of this outcome. At least 3 different views should be visible and they should include – front; top; left and a 3D view. Co-ordinate systems will allow creation of new models in relation to existing models.

Outcome 2

A series of drawings should be used to gather evidence for all the performance criteria of this outcome; mainly by producing simple solids involving interpenetrating solids and solids with holes and subtraction areas. At least one of the combined solids will be required to be rendered and one displayed in perspective. Revolution and extrusion solid modelling techniques should both be by height, taper and path.

Outcome 3

This outcome could be integrated by completing a full layout drawing of an assembled component showing main dimensions. The drawing would contain plan, elevation, end elevation and 3D view of an assembled artefact containing individually produced solid primitives. 3D views should include front; top; left and isometric.

Outcome 4

Rendered outputs should be produced from existing solid and surface models. It may be useful to base rendered outputs on the model produced in one of the earlier outcomes. At least 2 materials should be attached and should be appropriate for the model they represent. Lights will include distant, or ambient/ spotlight.

National Unit Specification: support notes (cont)

UNIT Computer-Aided 3D Modelling, Visualisation and Presentation
(Advanced Higher)

SPECIAL NEEDS

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment and Certification Arrangements for Candidates with Special Needs/Candidates whose First Language is not English* (SQA, 1998).

National Unit Specification: general information

UNIT   Computer-Aided Graphic Presentation (Advanced Higher)

NUMBER   D177 13

COURSE   Graphic Communication (Advanced Higher)

SUMMARY

The purpose of this unit is to develop an understanding of the principles of effective visual communication related to industrial and commercial practice, and to apply these principles in the production of a Graphic Presentation.

OUTCOMES

1   Evaluate the application of design principles in professional graphics presentations.
2   Design and produce a professional Graphic Presentation for a client group.
3   Desktop Publishing characteristics are identified and their functions described correctly.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained Higher Graphic Communication at grade A or B, or relevant experience in desk-top publishing.

CREDIT VALUE

1 credit at Advanced Higher.

National Unit Specification: general information (cont)

UNIT Computer-Aided Graphic Presentation (Advanced Higher)

CORE SKILLS

There is no automatic certification of core skills or core skills components in this unit.

Additional information about core skills is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, 1999).

National Unit Specification: statement of standards

UNIT Computer-Aided Graphic Presentation (Advanced Higher)

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 the Scottish Qualifications Authority.

OUTCOME 1

Evaluate the application of design principles in professional graphics presentations.

Performance criteria
(a)   Different styles of presentation are selected and their main elements clearly described.
(b)   The application of design principles in the selected graphic presentation is comprehensibly analysed.
(c)   Compare and contrast the application of design principles in selected professional graphic presentations.

Evidence requirements

Written and graphical evidence of the candidate's ability to evaluate the application of visual communication design principles within a professional graphical presentation specified within PCs (a) to (c).

OUTCOME 2

Design and produce a professional Graphic Presentation for a potential client group.

Performance criteria
(a)   A potential client group is identified and a background portfolio produced.
(b)   An appropriate design process is clearly described and detailed for the selected client group.
(c)   An effective design solution is developed for the perceived needs of the selected client group.
(d)   Appropriate computer page specifications are established and effective design elements and principles developed.
(e)   An effective professional graphic presentation is produced to meet the perceived requirements of the selected client group.

Evidence requirements

Written and graphical evidence of the candidates ability to design and produce a professional Graphic Presentation to successfully meet the specification as detailed in PCs (a) to (e).

National Unit Specification: statement of standards (cont)

UNIT Computer-Aided Graphic Presentation (Advanced Higher)

OUTCOME 3

Desktop Publishing characteristics are identified and their functions described correctly.

Performance criteria
(a)   The use of alternative file formats is correctly described in the context of Desktop Publishing.
(b)   Digital imaging terms are correctly explained in the context of Desktop Publishing.
(c)   Desktop features are correctly identified and their characteristics described correctly.
(d)   Typographic terms are correctly explained in the context of Desktop Publishing.
(e)   Commercial printing terms are correctly described in the context of Desktop Publishing.

Evidence requirements

Written evidence of the candidate's ability to demonstrate knowledge and understanding of desktop publishing terminology and basic printing terms across PCs (a) to (e).

National Unit Specification: support notes

UNIT Computer-Aided Graphic Presentation (Advanced Higher)

This part of the unit specification is offered as guidance. The support notes are not mandatory.

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

GUIDANCE ON CONTENT AND CONTEXT FOR THIS UNIT

The Graphic Presentation invites a wide range of candidate responses that may reflect their personal interests, areas of expertise or the resources that are available to the candidate.

The candidate should gain an appreciation of the levels of competence, understanding and skill that might be found in a business environment. Any situation in which information is presented graphically may be used as a context for the presentation.

The Graphic Presentation requires the candidate to show initiative, creativity, analysis and synthesis in the production of a multi-page document through independent investigation and study. The structure of this unit would embrace effective project management, processing of data, market research, acquisition of relevant concepts and knowledge, reasoned choice of content, the application of graphic techniques and evaluation.

Outcome 1

Demonstrate knowledge and understanding of visual communication design elements and principles in the context of professional graphic presentations. Examples of professional presentations include:

- Styles: informational; technical; leisure; promotional
- Elements: target audience; message; presentational features

Outcome 2

Design and produce a professional Graphic Presentation incorporating text and graphics for a specific client group. The Graphic Presentation should incorporate a minimum of three graphics, one scanned, one imported from CD-ROM, Internet or similar, one candidate – motivated. The evidence produced should be presented both as a hard copy and in file format.

Outcome 3

Desktop Publishing characteristics are identified and their functions described correctly. Computer terminology in the context of desk top publishing.

National Unit Specification: support notes (cont)

UNIT Computer-Aided Graphic Presentation (Advanced Higher)

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

A candidate-centred learning approach should be adopted by allowing the candidate to research current usage of DTP, using specialist publications and materials. The candidate should be given the opportunity to gain hands-on experience of a desktop publishing station. Approximately five hours should be spent dealing with the design aspects of DTP and examples of good practice should be shown and demonstrated as the basis for tutor-led discussion. Taught aspects may include aspects of effective visual communication, composition and visualisation.

The candidate should be encouraged to collect samples of modern printed materials, handouts, books/manuals produced by desk-top publishing manufacturers, to help build an appreciation of design principles. Regular group discussions are an important part of the design element of the module.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

National Assessment Bank materials have been created specifically to assess knowledge and understanding for each outcome. Assessments can take place either at the completion of an outcome or as an end test.

Assessment will be based upon the Graphic Presentation produced.

SPECIAL NEEDS

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment and Certification Arrangements for Candidates with Special Needs/Candidates whose First Language is not English* (SQA, 1998).