Unit 12: 2D, 3D and Time-based Digital Applications

Unit code: F/601/6793
QCF Level 4: BTEC Higher National
Credit value: 15

Aim
This unit aims to develop learners’ skills in using a broad set of software applications through the use of 2D, 3D and time-based digital techniques.

Unit abstract
This unit introduces learners to 2D, 3D and time-based digital applications. The scope offered to the designer working with these interactive tools is wide ranging. Creative approaches can be applied to exploring the potential of software applications in extending drawing and painting techniques. There are possibilities for both artists and designers to develop new strategies in working practices through reflection and reaction to the results of digital experimentation. In this unit learners should explore bitmap and vector graphic applications, and address the constraints associated with modelling 3D. They should also reflect on the potential of time-based software to be applied to creative and effective presentations of these elements.

An active experimental approach should encourage learners to broaden their visual thinking and creativity. The potential of combining drawing techniques and digital technology should be promoted widely to cross-fertilise creativity and to explore ways to integrate computer applications with art and design practice involving hand made imagery. Learners should explore 3D computer modelling techniques to create a basic 3D model or environment. This work should be combined with 2D digital artwork and incorporated in a presentation that uses time-based software.

Learning outcomes
On successful completion of this unit a learner will:
1. Be able to carry out a sustained exploration of 2D mark making techniques using software tools
2. Be able to develop the potential of images using digital techniques
3. Be able to carry out a sustained exploration of 3D modelling software
4. Be able to present outcomes creatively and effectively, using time-based Presentation software.
Unit content

1 **Be able to carry out a sustained exploration of 2D mark making techniques using software tools**

   *2D software*: industry standard; vector; compositional; image manipulation
   *Bitmap and vector graphics*: pixels; picture elements; painting; objects; bounding boxes; stretch; distort; paths; pen tool; file formats; digital mark-making techniques
   *Drawing devices*: graphics tablet; light pen; mouse; touch-screen; touch pad; stylus; puck; interactive whiteboard

2 **Be able to develop the potential of images using digital techniques**

   *Manipulation*: adjust colour; contrast; brightness; size; resolution; texture; form; cut; copy; paste; repeat; collage; layer; add text; cyclical process eg print out, rework printed copy, re-scan
   *Use techniques*: distortion; filters; curves; crop; adjust; enhance; styles; palettes; channels; transparency; opacity; invert; posterise; additive; reductive
   *Document*: record; stages; saving protocols; versions; sequential eg development, layering; additive; reductive

3 **Be able to carry out a sustained exploration of 3D modelling software**

   *Simple objects*: articulation; pivotal motion; axis; rotation; objects eg toy, sunglasses, tool, hinge, wheel, door, can opener
   *Animation*: movement; tween; morph; keyframe; timeline
   *Render*: modeling; surfaces eg textures, colour; light sources; reflective light; colour theory

4 **Be able to present outcomes creatively and effectively, using time-based presentation software**

   *Presentation*: preparation; files; consideration eg final output, physical size, resolution; printing requirements; files eg combining, compatibility, economy, physical size, palette, screen resolution
   *Combine*: elements eg drawn vector based imagery, graphics, text
   *Software*: eg presentation, movie, video log, sound; format eg projection, installation
   *Evaluate*: planning; intuition; response; technology; communication; content; format; intentions; reactions
## Learning outcomes and assessment criteria

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<th>Learning outcomes</th>
<th>Assessment criteria for pass</th>
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<td><strong>On successful completion of this unit a learner will:</strong></td>
<td><strong>The learner can:</strong></td>
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| LO1 | 1.1 research examples of 2D digital based markmaking  
1.2 use 2D software tools to produce digital artwork |
| LO2 | 2.1 use digital image manipulation techniques to create effective images  
2.2 document the image manipulation process |
| LO3 | 3.1 model simple objects using 3D modelling software  
3.2 render models with surface texture and lighting  
3.3 animate models using accurate parameters of movement |
| LO4 | 4.1 research approaches to using time-based presentation software  
4.2 combine 2D and 3D elements into time-based presentation software  
4.3 present final outcome  
4.4 evaluate final outcome. |
UNIT 12: 2D, 3D AND 4D DIGITAL APPLICATIONS

Guidance

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

The learning outcomes associated with this unit are closely linked with:

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<td>Unit 11: Digital Media in Art and Design</td>
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This unit has links to the Level 4 and Level 5 National Occupational Standards for IT and Telecoms Professionals, particularly the areas of competence of:


Essential requirements

Learners must have access to specialist facilities relevant to this unit.

Employer engagement and vocational contexts

Centres should develop links with practising artists, craftspeople and designers, to deliver assignments to learners or to provide work experience. A lecture or visit by a designer, programmer or practitioner local to the centre may provide useful and pertinent information on working practice.

Links with employers are essential to the delivery of the programme for work experience and future employment. Assignments should be vocationally relevant; centres should consider the delivery of ‘live projects’ for example to support the vocational content of the unit and program.