

# Unit 27: Digital Image Capture and Editing

<b>Unit code:</b>	<b>K/502/5025</b>
<b>QCF Level 3:</b>	<b>BTEC National</b>
<b>Credit value:</b>	<b>10</b>
<b>Guided learning hours:</b>	<b>60</b>

## ● Aim and purpose

The aim of this unit is to develop learners' skills and knowledge of digital image capture, scanning equipment and the techniques associated with digital image capture, editing and processing. Learners will develop skills in digital image capture and processing when they use digital scanning equipment and image processing software to capture, edit and manipulate images digitally.

## ● Unit introduction

Digital images are used by artists, designers and professionals in a range of art and design areas. Fine artists use digital images as starting points for work in other areas, or as the media in which to develop creative intentions. Designers use digital images as source materials, as a visual library of images that they find interesting, or use cameras as sketchbooks to record the world around them. Inspiration for practitioners' work can be developed from these sources. Practitioners can edit online at [www.photoshop.com](http://www.photoshop.com).

The proliferation of higher quality mobile phone cameras in recent years has broadened the scope and use of digital images on the internet. Many handheld camera devices provide on the spot evidence of events. The expansion of internet sites for posting images has enabled people from a wide range of backgrounds to develop anything from diary style records to guitar tablature tutorials online. Digital catalogues contain both still imagery and interactive sections.

Digital image acquisition using scanners is also used frequently by media professionals. For example, artists scan found 2D and 3D materials to create new work, designers use edited materials in web-based designs and animations, and photographers scan traditional negative materials for retouching and digital output. Picture libraries and archivists also use digital technology to capture and store different photographic imagery.

Digital production methods, including scanning, image editing and manipulation, are embedded in the work practices of the creative industries and are therefore essential skills for all entering those vocational areas. Captured digital imagery is also being used across the internet to support news stories, present individual artwork ideas and enhance personal vlogs. Fine artists also exploit the qualities of CCTV imagery to communicate ideas.

When learning how to use digital capture and scanning equipment learners will develop skills that will enable them to acquire and save digital files appropriately for a specified purpose. Assessment of the technical qualities of materials for capture and scanning will enable learners to develop an understanding of the suitability of different materials and their handling requirements. These workflow considerations, which need to be made prior to scanning, will enable learners to understand some of the limitations and capabilities of digital file creation. Learners will develop skills in converting materials to digital format, converting between different digital file formats and converting between different colour spaces. This will enable learners to examine the implications of colour space, file type and format in relation to end use and the importance of work flow.

Learners will learn to recognise and develop working practices to minimise the common faults associated with digital image creation. Learners will develop their digital image processing skills using industry standard software, learning to prepare and save images appropriately for a specified purpose. Learners will be introduced to the legal requirements, ethical issues and professional practices associated with digital image capture and processing.

## ● Learning outcomes

**On completion of this unit a learner should:**

- 1 Be able to capture digital imagery
- 2 Be able to process digital images
- 3 Know about legal requirements and ethical issues.

# Unit content

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## 1 Be able to capture digital imagery

*Scanning equipment:* scanners eg flatbed, film

*Lens based equipment:* eg digital cameras, mobile phone cameras, webcams

*Range of materials:* handling 2D and 3D eg line, continuous tone, screened, colour, monochrome, transparent, opaque, natural objects, found objects; CCTV footage,

*downloaded video, converted VHS*

*Scan:* workflow and end use eg print, screen, ppi, bit depth, colour space, crop, rotate, scale, levels, curves, sharpening, file format (eg TIFF, RAW, JPEG), file size, file storage

*Common faults:* unwanted effects eg pixelation, posterisation, colour casts, tonal changes, dust damage, fingerprints, scratches; lighting faults eg underexposure, overexposure

*Imagery:* applications eg archiving, presenting, digital artwork, importing across software, blogs, vlogs, photologs, sketchlogs, fine art work, installations, online presentations, e-portfolios, showreels, visual tutorials

## 2 Be able to process digital images

*Processing:* image manipulation techniques eg, workflow, output requirement (eg lpi, dpi), colour space, levels, curves, colour balance, tonal range, retouch, resolution, bit depth, file size, file format (eg RAW, TIFF, PSD, GIF), file compression (lossy, lossless); manipulation techniques eg combine, transform, distort, filters, effects; conversion eg colour space (eg RGB, Adobe RGB, CMYK), colour gamut, colour profiles, device dependency, moving image eg download, edit, upload, convert

*Editing techniques:* eg capture and download, file compression, editing software, uploading video, screengrabs, collage, photomontage

## 3 Know about legal requirements and ethical issues

*Legal requirements:* eg copyright, intellectual property, software licensing, libel, invasion of privacy

*Ethical issues:* eg confidentiality, representation, race, gender, religion, sexuality, equal opportunities

## Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
<b>P1</b> produce digital imagery for a specified use [IE, CT, SM]	<b>M1</b> produce digital imagery for a specified use with consistency, handling materials effectively to minimise common faults	<b>D1</b> produce independently, digital imagery for a specified use, carrying out digital image processing techniques creatively.
<b>P2</b> carry out digital image processing techniques to produce digital images [IE, CT, SM, RL]	<b>M2</b> carry out digital image processing with creative exploration of techniques to produce digital images.	
<b>P3</b> identify legal requirements and ethical issues related to digital images. [IE, SM]		

**PLTS:** This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

# Essential guidance for tutors

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## Delivery

The outcomes for this unit can be delivered through a structured programme of assignments as identified in the *Outline learning plan*. Alternatively the outcomes of this unit could be linked to tasks such as recording and compiling learners' own work for portfolios, show reels or competition entries.

Learners need to be able to use digital capture and scanning equipment to digitise materials for an identified purpose. The unit delivery involves learners in working with digital still images, basic video and scanning equipment. When scanning work as in Assignment 1, tutors should dictate a range of source materials to be used. By specifying materials for learners to scan eg transparent, opaque, line, tone colour, the associated different operating techniques will also be introduced. This approach will also enable learners to understand the importance of work flow planning. To enable learners to place work flow planning in a technical context learners will need to be taught about the technical aspects of scanning, for example the implications of file size, file format and resolution. The technical aspects, including recognition of common faults, may be effectively contextualised for learners through structured demonstrations and workshops during which learners are able to learn to operate scanners confidently. Learners should record their explorations and findings in their workbooks. Workbooks will evidence learner understanding of the technical aspects of scanning and will include information about scanners operation and records technical of data.

Learners will require support and direction when producing their digital images using digital image processing software. In Assignment 2 tutors will need to provide demonstrations and workshops during which learners are introduced to image capture and processing. Delivery will need to include tutor demonstrations of setting up cameras and using software and editing techniques. Short in-class tutorial activities will enable learners to explore digital processing techniques in a structured way, to ensure learners experience simple and more complex editing and manipulation techniques. For example, demonstrations to enable learners to see the effect of file compression on available memory and image quality would be valuable. Learners should explore editing techniques, experiment and record their findings in their workbooks to enable them to reflect upon their learning. Workbooks should be used to evidence learner understanding of the technical aspects of digital image processing such as colour space, and file compression. Tutors will need to teach learners some underpinning theory to enable them to save images appropriately for specified end use, for example lpi and dpi linked to output requirement. Delivery which includes a structured approach to the ongoing review of learner progress and sharing of experiences will enable learners to develop understanding of the potential of digital image processing. Learner comprehension of the potential of digital image processing can also be achieved through discussion of published examples of professional work. Learners should independently research the published work of others collating and annotating this in their workbooks. Learners should also explore the range of digital imagery in use across the web in developments such as video logs and video conferencing. Learners should be encouraged to achieve a balance between technical skills and creativity when manipulating images and should review their work from technical and aesthetic perspectives.

To enable learners to understand professional practices related to digital images learners should research the laws of copyright, protecting privacy, misappropriation and wider image use. Tutors will need to introduce learners to some appropriate research sources and examples when undertaking class discussion. Learners should investigate professional digital imaging practices and present a research file which includes their annotations of researched material. Alternatively evidence for this outcome could be through a visual and verbal presentation in learner groups.

## Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities and/assessment
Introduction to unit
Digital scanning equipment; introductions, demonstrations, workshops – whole class <ul style="list-style-type: none"><li>• planning workflow for end use: requirements for print and screen</li><li>• scanners: type, operation, ppi</li><li>• scanner controls: crop, rotate, scale, levels, curves, sharpening, bit depth, colour space, file format/size/storage</li><li>• materials; handling 2D and 3D</li><li>• common faults</li></ul>
<b>Assignment 1: Use Digital Scanning Equipment</b> Learners: <ul style="list-style-type: none"><li>• scan images in preparation for a montage for specified purpose</li><li>• identified message and target audience</li><li>• equipment; flat bed and film scanner</li><li>• specified end use; screen, RGB</li><li>• specified materials for scanning; monochrome line original, continuous tone colour original, transparent original, opaque original</li></ul>
Learners work independently to create workbooks. Learners: <ul style="list-style-type: none"><li>• plan montage</li><li>• research and select materials appropriate to specification</li><li>• plan workflow</li><li>• scan images</li><li>• produce images</li><li>• review digital files; fitness for purpose, common faults</li><li>• reflect and review own scans and work practices</li></ul>
Processing digital images; introductions, demonstrations, workshops – whole class: <ul style="list-style-type: none"><li>• planning workflow for end use: requirements for print and screen</li><li>• editing techniques</li><li>• manipulation techniques</li><li>• colour space, colour profiles, device dependency</li></ul>

## Topic and suggested assignments/activities and/assessment

### **Assignment 2:** Produce Digital Imagery

Learners use digital imagery to produce an online tutorial to support an art and design activity (learners to choose, but directed by tutor eg making a canvas stretcher). Learners:

- do initial appraisal of range of on-line tutorials
- develop designs for their own tutorial
- set up and capture digital video/stills
- compress and upload to centre intranet
- reflect on and review their own work

Learner-initiated study

Professional practices related to digital images; texts and examples – whole class

### **Assignment 3:** Professional Practices Related to Digital Images

Working independently learners research legal requirements and ethical issues. Learners produce workbook with annotated examples of images and texts which demonstrate their understanding of the issues and requirements of professional practice

Digital scanning equipment; introductions, demonstrations, workshops – whole class

- planning workflow for end use: requirements for print and screen
- scanners: type, operation, ppi
- scanner controls: crop, rotate, scale, levels, curves, sharpening, bit depth, colour space, file format/size/storage
- materials; handling 2D and 3D
- common faults

Review of unit and assessment

## Assessment

For P1 learners will produce digital files, which are fit for specified end using digital equipment. At pass grade learners may need some support when planning their work flow relative to end use. For example learners may need guidance to select appropriate bit depth and file size for the specified end result. Learners will be able to show their understanding of factors such as resolution and contrast together with common faults such as pixilation and colour casts in their workbook annotations in addition to the digital files produced.

For P2 learners will use appropriate editing techniques, for example use appropriate resolution, file size, format and compression for specified end use. Learners will also use simple manipulation techniques, for example combine images when scanning. At pass level learners exploration of opportunities for manipulation may be limited and learners may need support to plan workflow for specified end use, for example with regard to the degree of sharpening and the use of masks and layer blending. Learners will be able to show some understanding of colour management, for example colour space, in their workbook annotations in addition to their digital files. Video work will be carried out in a straightforward manner. Health and safety will be observed, and captured imagery will meet the requirements of the task. Alternative ideas may tend to be underdeveloped or abandoned early.

For P3 learners will demonstrate their understanding of the legal requirements and ethical issues related to digital images. For example learners may explain the importance of intellectual property and how this impacts upon the use of images. When explaining issues learners will show a basic understanding of the legal requirements using researched visual examples and reference material. Representation may be addressed through discussion of examples of researched or constructed images and annotated reference material.

For M1 learners will produce digital scans consistently showing their understanding by selecting appropriate tools to control the scanning process. At merit grade learners may still need occasional guidance in planning workflow, however learners will generally handle materials skilfully and in doing so will minimise common faults which will be reflected in the quality of scans produced.

For M2 learners will explore image manipulation techniques creatively and demonstrate independence in their use of controls when producing digital images. For example learners may show they have explored the effect of several different techniques such as transform and distort whilst refining their images. Learners may then go on to show that they have made judgements about which image manipulation techniques are most appropriate to the final image.

For M2, video and still photography work will be explored with more purpose than in work assessed at P2. Ideas will be carried forward to the production phase. Links between examples viewed ie blogs and own development work will be made clearly. There will be a considered approach to applying editing skills.

For D1 learners will produce digital images with independence and skill exploring digital image processing techniques creatively. Learners will demonstrate controlled skillful handling of the process through well considered selection and application of tools to produce coherent digital images. Understanding of technical aspects such as colour space, file compression, and resolution linked to output requirement will be demonstrated in the digital images produced and in evaluative workbook contents. Video and still photography work will be creative and show an independent approach to using camera or lens based equipment and editing software. Ideas will realise the purpose of the brief in a comprehensive manner.

## Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, M1, D1	<b>Assignment 1:</b> Use Digital Scanning Equipment	Photographer scans images in preparation for a montage for holiday brochure.	Oral presentation. Workbook evidence.
P2, M2, D1	<b>Assignment 2:</b> Produce Digital Imagery	Photographer uses digital image capture and processing techniques to develop an online tutorial.	Oral presentation. Workbook evidence. On-line tutorial.
P3	<b>Assignment 3:</b> Professional Practices Related to Digital Images	Photographer gathers material for presentation to clients.	Workbook evidence.

## Links to other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Art and Design sector suite. This unit has particular links with the following unit titles in the Art and Design suite:

Level 1	Level 2	Level 3
Introduction to Creative Use of Computers	Computers in Graphic Design	Computers in Art and Design
		Image Manipulation Computer Applications

## National Occupational Standards

This unit also provides development opportunities for some of the underpinning skills, knowledge and understanding of the following National Occupational Standards:

### Skillset Sector Skills Council

Photo Imaging

- C6 Contribute to The Development of the Photo Imaging Brief
- D1 Create Original Artwork for Digital Images
- D2 Carry Out Specified Image Scanning
- D3 Plan and Produce Scanned Images
- D4 Carry Out Specified Image Editing
- D5 Plan and Produce Edited Images
- D6 Prepare For, and Produce, Image Output
- D7 Contribute to the Effectiveness of Imaging Activities
- D8 Send and Receive Image Data Files by Digital Means
- D11 Edit Images Using a Digital Processing Station

### Essential resources

For this unit learners need access to appropriate photographic media and technology for digital image capture and processing. This includes access to digital image scanning devices together with associated computer technology and software.

### Employer engagement and vocational contexts

Centres should develop links with creative and media professionals who operate their own business and those who are employed in small and medium sized enterprises. Visits or talks from media professionals will help learners to understand the importance of digital image capture to a broad range of creative and media industries.

Centres should develop links with practising professionals, to deliver assignments to learners or to provide work experience.

Links with employers are essential to the delivery of the programme for work experience and future employment.

Vocational learning support resources:

- Learning and Skills Network – [www.vocationallearning.org.uk](http://www.vocationallearning.org.uk)

Business and finance advice:

- local and regional Business Link – [www.businesslink.gov.uk](http://www.businesslink.gov.uk)

Assignments should be vocationally relevant; centres should consider the delivery of 'live projects', for example, to support the vocational content of the unit and programme.

Creative and Cultural Skills ([www.ccskills.org.uk](http://www.ccskills.org.uk)), the Sector Skills Council for Arts, Crafts and Design, has launched the web portal Creative Choices ([www.creative-choices.co.uk](http://www.creative-choices.co.uk)). This portal has a range of information about careers in the arts, crafts and design sector, including job descriptions.

Skillset, the Sector Skills Council for Creative Media ([www.skillset.org](http://www.skillset.org)), provides details on its photo pages ([www.skillset.org/photo](http://www.skillset.org/photo)) careers and the industry and has a regularly updated news and events page Indicative reading for learners.

## Indicative reading for learners

### Textbooks

Allen E and Triantaphillidou P – *The Manual of Photography and Digital Imaging* (Focal Press, 2009)  
ISBN 978-0240520377

Davies A – *Focal Digital Imaging A to Z* (Focal Press, 2005) ISBN 978-0240519807

Evening M and Schewe J – *Adobe CS4 for Photographers: The Ultimate Workshop* (Focal Press, 2009)  
ISBN 978-0240811185

Farace J – *Getting Started with Digital Imaging: Tips, Tools and Techniques for Photographers* (Focal Press, 2007)  
ISBN 978-0240808383

Lea D – *Creative Photoshop: Digital Illustration and Art Techniques* (Focal Press, 2007) ISBN 978-0240521343

Russotti P – *Digital Photographic Workflow* (Focal Press, 2009) ISBN 978-0240810959

Tarrant J – *Understanding Digital Cameras: Getting the Best Image from Capture to Output* (Focal Press, 2008)  
ISBN 978-0240520247

Zakia R – *Perception and Imaging: Photography, A Way of Seeing* (Focal Press, 2007) ISBN 978-0240809304

### Journals

*British Journal of Photography*

*Digital Photo*

*Practical Photography*

### Website

[www.computerarts.co.uk](http://www.computerarts.co.uk)      Computer Arts Magazine

## Delivery of personal, learning and thinking skills (PLTS)

The following table identifies the PLTS that have been included within the assessment criteria of this unit:

Skill	When learners are ...
<b>Independent enquirers</b>	exploring image manipulation techniques to create digital images researching ideas for digital image creation researching information about legal and ethical issues
<b>Creative thinkers</b>	exploring image manipulation techniques to create digital images exploring ideas for digital image creation
<b>Reflective learners</b>	creating digital images using image manipulation techniques
<b>Self-managers</b>	exploring image manipulation techniques and creating digital images researching ideas for digital image creation researching information about legal and ethical issues.

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
<b>Team workers</b>	researching and presenting information about legal and ethical issues in a group
<b>Effective participators</b>	researching and presenting information about legal and ethical issues in a group.

## ● Functional Skills – Level 2

Skill	When learners are ...
<b>ICT – Use ICT systems</b>	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	exploring image manipulation techniques creating digital images
Manage information storage to enable efficient retrieval	exploring image manipulation techniques creating digital images
Troubleshoot	solving connection issues with scanning and storage equipment
<b>ICT – Find and select information</b>	
Select and use a variety of sources of information independently for a complex task	researching ideas for digital image creation researching information about legal and ethical issues
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	considering digital picture libraries and their different policies regarding copyright and payment to photographers
<b>ICT – Develop, present and communicate information</b>	
Bring together information to suit content and purpose	notation, EXIF data and metatags used to accompany digital work on website
Present information in ways that are fit for purpose and audience	setting up a website to show digital work
Evaluate the selection and use of ICT tools and facilities used to present information	considering formats for on-screen presentation
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists.	managing a blog about the assignments.