The Further Education and Training Awards Council (FETAC) was set up as a statutory body on 11 June 2001 by the Minister for Education and Science. Under the Qualifications (Education & Training) Act, 1999, FETAC now has responsibility for making awards previously made by NCVA.

FETAC
Further Education and Training Awards Council
Comhairle na nDámhachtainí Breisoideachais agus Oiliúna

Module Descriptor

Image Processing

Level 5 E20131

September 2001

www.fetac.ie

Level 5 Module Descriptor

Summary of Contents

Introduction	Describes how the module functions as part of the national vocational certificate framework.
Module Title	Indicates the module content. This title appears on the learner's certificate. It can be used to download the module from the website www.fetac.ie.
Module Code	An individual code is assigned to each module; a letter at the beginning denotes a vocational or general studies area under which the module is grouped and the first digit denotes its level within the national vocational certificate framework.
Level	Indicates where the module is placed in the national vocational certificate framework, from Level 3 to Level 6.
Credit Value	Denotes the amount of credit that a learner accumulates on achievement of the module.
Purpose	Describes in summary what the learner will achieve on successfully completing the module and in what learning and vocational contexts the module has been developed. Where relevant, it lists what certification will be awarded by other certification agencies.
Preferred Entry Level	Recommends the level of previous achievement or experience of the learner.
Special Requirements	Usually 'none' but in some cases detail is provided here of specific learner or course provider requirements. There may also be reference to the minimum safety or skill requirements that learners must achieve prior to assessment.
General Aims	Describe in 3-5 statements the broad skills and knowledge learners will have achieved on successful completion of the module.
Units	Structure the learning outcomes; there may be no units.
Specific Learning Outcomes	Describe in specific terms the knowledge and skills that learners will have achieved on successful completion of the module.
Portfolio of Assessment	Provides details on how the learning outcomes are to be assessed.
Grading	Provides details of the grading system used.
Individual Candidate Marking Sheets	List the assessment criteria for each assessment technique and the marking system.
Module Results Summary Sheet	Records the marks for each candidate in each assessment technique and in total. It is an important record for centres of their candidate's achievements.
Appendices	Can include approval forms for national governing bodies.
Glossary of Assessment Techniques	Explains the types of assessment techniques used to assess standards.
Assessment Principles	Describes the assessment principles that underpin FETAC approach to assessment.

Introduction

A module is a statement of the standards to be achieved to gain an FETAC award. Candidates are assessed to establish whether they have achieved the required standards. Credit is awarded for each module successfully completed.

The standards in a module are expressed principally in terms of specific learning outcomes, i.e. what the learner will be able to do on successful completion of the module. The other elements of the module - the purpose, general aims, assessment details and assessment criteria - combine with the learning outcomes to state the standards in a holistic way.

While FETAC is responsible for setting the standards for certification in partnership with course providers and industry, it is the course providers who are responsible for the design of the learning programmes. The duration, content and delivery of learning programmes should be appropriate to the learners' needs and interests, and should enable the learners to reach the standard as described in the modules. Modules may be delivered alone or integrated with other modules.

The development of learners' **core skills** is a key objective of vocational education and training. The opportunity to develop these skills may arise through a single module or a range of modules. The core skills include:

- taking initiative
- taking responsibility for one's own learning and progress
- problem solving
- applying theoretical knowledge in practical contexts
- being numerate and literate
- having information and communication technology skills
- sourcing and organising information effectively
- listening effectively
- communicating orally and in writing
- working effectively in group situations
- understanding health and safety issues
- reflecting on and evaluating quality of own learning and achievement.

Course providers are encouraged to design programmes which enable learners to develop core skills.

1 Module Title **Image Processing**

2 Module Code **E20131**

3 Level **5**

4 Credit Value **1 credit**

5 Purpose

This module has been designed to develop practical understanding of digital image processing using image processing hardware and software. It may be taken as an elective module on the Level 5 Certificate in Media Production award. The module is suitable for learners seeking certification in multi-media skills, especially in the digital photography and digital graphics areas.

The module is designed to provide the learner with the appropriate knowledge and skills to visualise and plan all the stages involved in the production and manipulation of digital graphics images, acquire hands-on experience of a range of computer hardware and software, configured for image processing purposes, and to acquire an appropriate level of knowledge and skill in the key techniques of image processing.

6 Preferred Entry Level

Level 4 Certificate, Leaving Certificate or equivalent qualifications and/or relevant life and work experiences.

7 Special Requirements

None.

8 General Aims

Learners who successfully complete this module will:

8.1 develop an awareness of digital image processing from planning through design to the production of creative artwork

8.2 develop an awareness of colour reproduction and its visual impact

8.3 communicate and liaise with clients on matters regarding a design brief

8.4 become familiar with appropriate hardware/software configurations, necessary security procedures, the potential and limitations of image processing technology

8.5 acquire a practical knowledge of image processing systems and interfacing techniques

8.6 develop an appropriate level of competency in image manipulation, using computer technology

8.7 produce a range of creative computer-based images for a variety of purposes.

9 Units

The specific learning outcomes are grouped into 4 units.

Unit 1 **Scanning Techniques**
Unit 2 **Colour for Image Processing**
Unit 3 **Image Processing Skills**
Unit 4 **Image Output**

10 Specific Learning Outcomes

Unit 1 **Scanning Techniques**

Learners should be able to:

10.1.1 configure an image processing system for the scanning of various images

10.1.2 evaluate original art work for the purposes of determining appropriate scanning mode, resolution, size and scale

10.1.3 make adjustments to scanning software preset values as appropriate to purpose

10.1.4 perform a scan of an image for the purpose of exporting it to an image processing application.

Unit 2	**Colour for Image Processing**	
	Learners should be able to:	
10.2.1	operate in various colour modes and models, e.g. RGB, CMYK, HSB, indexed, greyscale, 1 bit, etc.	
10.2.2	calibrate a monitor to compensate for factors affecting both the on-screen image and its conversion to printed output and/or for export to other applications	
10.2.3	identify out-of-gamut colour for the purpose of making appropriate adjustments	
10.2.4	compare and contrast bitmap, greyscale and various colour modes for pixel depth and file size	
10.2.5	distinguish between continuous tone and half tone images	
10.2.6	define colours in a colour palette or list using various colour models and gradients.	
Unit 3	**Image Processing Skills**	
	Learners should be able to:	
10.3.1	start up and operate a computer and various peripherals configured for image processing	
10.3.2	utilise the image-processing interface, including toolboxes, menus, palettes, plug-in filters, etc., on a computer system specifically configured for the purpose	
10.3.3	import graphic images (bitmap and vector) from various sources such as: hard disk, screen capture, image libraries, scanners, CD-ROM, digital camera, Internet, etc.	
10.3.4	distinguish between various file formats, e.g. generic, PICT, TIFF, EPS, BMP, GIF, PCX, JPEG, etc.	
10.3.5	make adjustments to colour and tone utilising colour correction tools with reference to highlights, midtones and shadows	
10.3.6	make adjustments to an image for blur and sharpness	
10.3.7	utilise a range of tools and techniques for selecting, editing, painting and text manipulation	
10.3.8	manipulate masks creatively	

10.3.9	design complex images with the help of layers, clipping groups, layer masks and adjustment layers
10.3.10	apply a range of filters to images or selections for the purpose of adding texture, and creating special effects
10.3.11	use anti-aliasing to optimise image and text presentation quality.
Unit 4	**Image Output**
	Learners should be able to:
10.4.1	save and export images in various file formats as appropriate, for hard-copy production, display on computer screen, use in other applications, distribution on the world-wide-web, etc.
10.4.2	specify print settings for the production of hard copy proofs
10.4.3	produce hard copy of colour separations
10.4.4	export images to page-layout application software
10.4.5	identify legal and ethical implications involved, such as licensed software, copyright, quotations and legally binding contracts, use of third-party graphics, packaging regulations, code of conduct of professional bodies, etc.

11 Portfolio of Assessment

Please refer to the glossary of assessment techniques and the note on assessment principles at the end of this module descriptor.
All assessment is carried out in accordance with FETAC regulations.
Assessment is devised by the internal assessor, with external moderation by FETAC.

Summary	**Collection of Work**	**60%**
	Project	**40%**

11.1 Collection of Work

The internal assessor will devise guidelines for candidates on gathering a collection of work that demonstrates evidence of a range of specific learning outcomes.

The collection will include:

- retouched images
- colourised greyscale images
- textured tiles with special effects
- evidence of scanning techniques
- printouts of initial and final images, plus at least three printouts at various stages
- colour separations
- saved and exported images in various file formats
- listing of tools and techniques used, the order in which they were applied and the effect achieved
- file listings and software application used.

Candidates are required, given the difficulties likely to be encountered with file sizes, to have regard to their own computer system limitations when determining image sizes, resolutions etc.
All electronic files must be retained and made available as evidence.

11.2 Project

The internal assessor will devise a project brief that requires candidates to demonstrate:

- mastery of tools and techniques
- design skills.

The project brief will require the candidate to design a series of at least **six** completed full colour images. The series could be a series of stamps, banknotes, greeting cards, a calendar, a series of website elements, a CD-ROM image bank, or other appropriate topic. Both text and graphic elements must be included.

Evidence presented will include:

- development of design ideas from concept visualisation to final production
- printouts of finished series
- image details including dimensions, digital file size, resolution, colour mode, file format
- file listings, hardware and software specifications
- notes and sketches indicating research and preparatory work.

Candidates are required, given the difficulties likely to be encountered with file sizes, to have regard to their own computer system limitations when determining image sizes, resolutions etc.
All electronic files must be retained and made available as evidence.

12 Grading

Pass	50 - 64%
Merit	65 - 79%
Distinction	80 - 100%

Individual Candidate Marking Sheet 1		Image Processing E20131 Collection of Work 60%

Candidate Name: _____ **PPSN.:** _____

Centre: _____ **Centre No.:** _____

Assessment Criteria	Maximum Mark	Candidate Mark
Mastery of Tools and Techniques • appropriate tools/techniques selected • wide range of tools/techniques efficiently used	**20**	
Technological Awareness • files managed successfully • appropriate resolution, colour mode, file formats and scanning modes chosen	**20**	
Image Output • complete range of specified colour printouts included • accurate colour separations achieved • images in various formats saved and exported • good visual impact achieved in final images	**20**	
TOTAL MARKS *This mark should be transferred to the Module Results Summary Sheet*	**60**	

Internal Assessor's Signature: _____ ***Date:*** _____

External Authenticator's Signature: _____ ***Date:*** _____

Individual Candidate Marking Sheet 2		Image Processing E20131 Project 40%

Candidate Name: _____ **PPSN.:** _____

Centre: _____ **Centre No.:** _____

Assessment Criteria	Maximum Mark	Candidate Mark
Mastery of Tools and Techniques • components of project completed as specified • suitable range of tools/techniques efficiently used • text and graphics integrated successfully • hardware, software and image details fully and accurately specified • files managed successfully	**20**	
Design Skills • thorough research and preparation evident in notes and sketches • sequential development of ideas clearly demonstrated • colour, space used imaginatively • style consistent within series and suited to purpose • final product carefully presented	**20**	
TOTAL MARKS *This mark should be transferred to the Module Results Summary Sheet*	**40**	

Internal Assessor's Signature: _____ ***Date:*** _____

External Authenticator's Signature: _____ ***Date:*** _____

FETAC Module Results Summary Sheet

Module Title: Image Processing
Module Code: E20131

Assessment Marking Sheets	Mark Sheet 1	Mark Sheet 2	Total 100%	Grade*
Maximum Marks per Marking Sheet	60	40		
Candidate Surname / *Candidate Forename*				

Signed:

Internal Assessor: _____ *Date:* _____

This sheet is for internal assessors to record the overall marks of individual candidates. It should be retained in the centre. The marks awarded should be transferred to the official FETAC Module Results Sheet issued to centres before the visit of the external Authenticator.

Grade*
D: 80 - 100%
M: 65 - 79%
P: 50 - 64%
U: 0 - 49%
W: candidates entered who did not present for assessment

Glossary of Assessment Techniques

Assignment

An exercise carried out in response to a brief with specific guidelines and usually of short duration.

Each assignment is based on a brief provided by the internal assessor. The brief includes specific guidelines for candidates. The assignment is carried out over a period of time specified by the internal assessor.

Assignments may be specified as an oral presentation, case study, observations, or have a detailed title such as audition piece, health fitness plan or vocational area profile.

Collection of Work

A collection and/or selection of pieces of work produced by candidates over a period of time that demonstrates the mastery of skills.

Using guidelines provided by the internal assessor, candidates compile a collection of their own work. The collection of work demonstrates evidence of a range of specific learning outcomes or skills. The evidence may be produced in a range of conditions, such as in the learning environment, in a role play exercise, or in real-life/work situations.

This body of work may be self-generated rather than carried out in response to a specific assignment eg art work, engineering work etc.

Examination

A means of assessing a candidate's ability to recall and apply skills, knowledge and understanding within a set period of time (time constrained) and under clearly specified conditions.

Examinations may be:

- practical, assessing the mastery of specified practical skills demonstrated in a set period of time under restricted conditions
- oral, testing ability to speak effectively in the vernacular or other languages
- interview-style, assessing learning through verbal questioning, on one-to-one/group basis
- aural, testing listening and interpretation skills
- theory-based, assessing the candidate's ability to recall and apply theory, requiring responses to a range of question types, such as objective, short answer, structured, essay. These questions may be answered in different media such as in writing, orally etc.

Learner Record

A self-reported record by an individual, in which he/she describes specific learning experiences, activities, responses, skills acquired.

Candidates compile a personal logbook/journal/diary/daily diary/ record/laboratory notebook/sketch book.
The logbook/journal/diary/daily diary/record/laboratory notebook/sketch book should cover specified aspects of the learner's experience.

Project

A substantial individual or group response to a brief with guidelines, usually carried out over a period of time.

Projects may involve:

research – requiring individual/group investigation of a topic
process – eg design, performance, production of an artefact/event

Projects will be based on a brief provided by the internal assessor or negotiated by the candidate with the internal assessor. The brief will include broad guidelines for the candidate. The work will be carried out over a specified period of time.

Projects may be undertaken as a group or collaborative project, however the individual contribution of each candidate must be clearly identified.

The project will enable the candidate to demonstrate: (*some of these – about 2-4*)

- understanding and application of concepts in (specify area)
- use/selection of relevant research/survey techniques, sources of information, referencing, bibliography
- ability to analyse, evaluate, draw conclusions, make recommendations
- understanding of process/planning implementation and review skills/ planning and time management skills
- ability to implement/produce/make/construct/perform
- mastery of tools and techniques
- design/creativity/problem-solving/evaluation skills
- presentation/display skills
- team working/co-operation/participation skills.

Skills Demonstration

Assessment of mastery of specified practical, organisational and/or interpersonal skills.

These skills are assessed at any time throughout the learning process by the internal assessor/another qualified person in the centre for whom the candidate undertakes relevant tasks.

The skills may be demonstrated in a range of conditions, such as in the learning environment, in a role-play exercise, or in a real-life/work situations.

The candidate may submit a written report/supporting documentation as part of the assessment.

Examples of skills: laboratory skills, computer skills, coaching skills, interpersonal skills.

FETAC Assessment Principles

1 Assessment is regarded as an integral part of the learning process.

2 All FETAC assessment is criterion referenced. Each assessment technique has **assessment criteria** which detail the range of marks to be awarded for specific standards of knowledge, skills and competence demonstrated by candidates.

3 The mode of assessment is generally local i.e. the assessment techniques are devised and implemented by internal assessors in centres.

4 Assessment techniques in FETAC modules are valid in that they test a range of appropriate learning outcomes.

5 The reliability of assessment techniques is facilitated by providing support for assessors.

6 Arising from an extensive consultation process, each FETAC module describes what is considered to be an optimum approach to assessment. When the necessary procedures are in place, it will be possible for assessors to use other forms of assessment, provided they are demonstrated to be valid and reliable.

7 To enable all learners to demonstrate that they have reached the required standard, candidate evidence may be submitted in written, oral, visual, multimedia or other format as appropriate to the learning outcomes.

8 Assessment of a number of modules may be integrated, provided the separate criteria for each module are met.

9 Group or team work may form part of the assessment of a module, provided each candidate's achievement is separately assessed.

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