

# DIGITAL PRINT PROCESSES

## List of Training Units

### **Requirements to complete Level 3:**

The first three units listed are compulsory: 23554, 2281 and 23556.

In addition, select a minimum 70-75 credits from **Level 3** (or above) elective units to complete Level 3 (the possibility of including any Level 4 elective units must be discussed with the Training Liaison Officer).

### **Requirements to complete Level 4:**

The last three Level 4 units listed are compulsory: 20099, 20057 and 23557.

In addition, select a minimum 40-45 credits from **Level 4** (or above) elective units to complete Level 4.

### **THE LEVEL 3 COMPULSORY UNITS:**

#### **Unit 23554: Safe working practices in the printing industry**

##### **Level 2 NQF Credit 5**

In a digital print environment: learn the statutory rights and responsibilities, and comply with safety requirements, emergency and evacuation procedures, and fire emergency procedures. Observe good work practices and learn the ergonomic principles for the safe operation of a computer system. First aid equipment and supplies are located and described. Knowledge of company procedures to be followed in the event of an accident is demonstrated. Identify the work area's first aid person. Fire extinguishers in the work area are located and their proper use explained. Company procedures for housekeeping are followed in terms of floors, walkways, electrical leads and equipment, storage, and cleaning up. Safe manual techniques are followed for lifting, stacking and handling. Equipment is used and maintained in safe condition, and any faults are rectified in accordance with workplace practices. Hazard control measures as circulated by the company are described and followed.

#### **Unit 2281: Demonstrate knowledge of the printing industry**

##### **Level 2 NQF Credit 7**

This unit covers organisations and training agreements, as well as legislation relevant to the industry. The importance of maintaining confidentiality is explained in terms of the business affairs of the company's clients and in terms of the company's business. The effects of the Privacy Act 1993 are explained in relation to confidentiality of information. Knowledge of the main printing and finishing processes including offset, flexography, screen printing, digital processes, letterpress, gravure, binding, laminating, embossing, varnishing, collating, mounting, folding, creasing, indexing, die cutting, foiling. Understand workflow, follow written instructions and complete forms. Use instruction marks applicable to the process being undertaken. Using reference material to ensure procedures are followed and required standards are met. Learn about the importance of monitoring new developments in technology.

#### **Unit 23556: Demonstrate knowledge of requirements for digital printing**

##### **Level 3 NQF Credit 15**

Learn the operation of a digital printer. The transferring of images on to the substrate during the print run is described in terms of the different applications used. This may include toner, liquid ink and solid ink. Systems used for multi colour printing are described in terms of the differences between them such as single pass and multi pass. Features commonly included with a digital printer are listed and their purpose described. This may include Raster Image Processor (RIP), scanner, fax, scan to email, networking, finishing, calibration. Quality control procedures used in the digital printing environment. Learn substrates used for digital printing. Use industry terms and vocabulary applicable to digital printing. Demonstrate knowledge of the colour theory and use colour terms including additive colours (red, green and blue light); subtractive colours (cyan, yellow, magenta, black) and the understanding of halftones. The procedures used for packing and despatch.

## LEVEL 3 ELECTIVE UNITS

### Unit 20097: Digital printing of client files

#### Level 3 NQF Credit 15

Prepare machine(s) for print; check electronic files for problems and/or faults in accordance with workplace practices; assemble job requirements, run job, and check output; undertake print finishing tasks and prepare job for despatch, and follow good work practices and housekeeping procedures in accordance with workplace practices. The range of jobs will include both black and white and colour. The print finishing tasks to be undertaken will be of a simple nature and will include both on-line and off-line finishing. There is no requirement to operate complex binding and finishing machinery. Trainees undertaking this unit standard will *complete a portfolio of work for assessment* that indicates they have successfully completed the range of tasks specified in this unit standard. They will repeatedly produce a wide range of jobs from both electronic file and hard-copy. Jobs will include simple booklets, single page documents, flyers, multi-stock and double sided work.

### Unit 17924: Typography

#### Level 3 NQF Credit 20

Format type and design at a speed and accuracy applicable to the equipment, job specifications and in accordance with workplace practices; and produce, read and correct proofs. *A portfolio of work is to be assembled by the trainee for assessment.* It must include at least four documents that have been produced with a range of sizes and orientations using typographical features which will include different paragraph styles, alignments, use of tabs, headings, different font styles, special characters, ligatures (if applicable), contrast, letter/word and line spacing used appropriately. The documents to be presented for evidence of competency will be chosen, from those created throughout the training programme by the candidate in conjunction with the assessor or training supervisor, to ensure they cover the range of skills required for the checklist.

### Unit 23558: Creating documents and digital printing

#### Level 3 NQF Credit 20

Create a wide range of documents using commonly used software applications, and edit and print simple images using a software application, in accordance with workplace practices. Learn basic typography and digital imaging skills so that documents are of a reasonable standard. Basic software could be the Microsoft Office Suite or similar, or basic features of simple publishing and digital imaging software packages. Enter text, prepare the images and create the whole document for printing. Accurate proofing of all documents is expected. The proof marks used may be any that are acceptable in the business. Trainees undertaking this unit standard will *complete a portfolio of work for assessment.* This will indicate they have successfully completed the range of tasks specified in this unit standard. They will repeatedly produce a wide range (10 – 15) of jobs including simple booklets, single page documents, flyers, multi-stock, and double sided work.

### Unit 17927: Impositions

#### Level 3 NQF Credit 10

Draw imposition schemes and impose pages for printing. Pages are imposed to meet the requirements of the press and job specifications for sheet-fed (self backer and sheet work up to sixteen pages) and reel-fed (up to thirty two pages). Sheet-fed includes work and turn, work and tumble, self backer, sheet work, multiple section work, saddle stitched, side stitched). Reel-fed includes web widths, number of webs, number of printing units, folder configuration, tabloid, broadsheet, magazine, book.

*Level 3 Elective Units continued . . .*

## **Unit 23829: Finishing for large format print**

### **Level 3 NQF Credit 15**

Mounting techniques and materials are described in terms of those used for large format printing. This may include stretching (canvas types), foam board, backlit displays, wall mounting, signage, posters, snap frames, retail displays, banners, cars, mounting onto board. Techniques and materials for creating portable displays using large format printing are described. This may include pull up display units, flags, rotating/revolving displays, street walkers, pop-ups, banners. Use finishing techniques and materials for large format printing such as pull up display units, flags, rotating/revolving displays, street walkers, pop-ups, posters, cars, billboards, retail displays, fine art, banners, snap frames, backlit displays, framing, varnishes, laminates, water-proofs, UV protectors. Appropriate finishing techniques are identified for a range of jobs, and appropriate materials are sourced and prepared. The finishing techniques are completed within times set by the company, and in accordance with established workplace practices. The finished product meets the customer's specifications and finishing requirements.

## **Customer service**

### **Level 3 NQF Credit 8**

A new module covering several unit standards to help improve your customer service skills. Learn how to understand your customers, This is a critical element in providing customer service. It involves good communication and data gathering. Find information and methods about how to gather and make sense of customer information to eventually provide customer satisfaction.

## **Bar coding (3 Units: 21141, 21142, 21143)**

### **Level 3 NQF Credit 12**

Learn the basics of the EAN.UCC (European Article Number Uniform Code Council) system; bar code structure; and verification reporting. The physical requirements that apply to barcodes are stated: size, height, colours, light margins, location, magnification, X-dimension, module width. Create bar codes to meet EAN.UCC standards; bar code location requirements; bar code and related data requirements for product to be marketed in Australasia; and prepare a bar code quality programme. Demonstrate knowledge of: the structure of EAN.UCC symbols; the issues associated with printing bar codes; the use of thermal bar code printers; and bar code production on product.

## **Unit 25398: Digital photography**

### **Level 3 NQF Credit 20**

Demonstrate knowledge of digital photography for digital processes in accordance with workplace practices. The differences between a compact digital camera and a single lens reflex digital camera. The resolution of a digital image is explained, and a description of its relationship to file size, and the proposed final use of the image. The different formats of images are identified and described. Describing colour spaces in terms of colours in images. Camera is maintained and is set up ready for use. Present photographs using a digital still camera for digital processes. The different photographic situations and technical considerations of photography is described and the range of photographic modes that have been used. Download and manipulate images from a digital still camera and viewed electronically. Image files are saved and appropriately named for retrieval. Images are digitally adjusted to meet job requirements and are formatted to specifications, and saved appropriately. Open and print a range of images saved from a digital still camera. A range of saved still images is opened and printed to given specifications on/in specified media.

## LEVEL 4 ELECTIVE UNITS

### Unit 25342: Digital imaging

#### Level 4 NQF Credit 20

Operators are able to: select, source, and download images, to meet the job requirements. This may include: pre-printed, photographs, transparencies, illustrations, line work. Evidence is required from two input devices such as scanner, digital camera, internet, photo disc, video. Images are adjusted to meet photographic specifications. This may include: colour casts, scratches/spots removed, red eye removal, resolution, size, colour space, levels/curves, tonal range, brightness, contrast, lightness, composition, moiré patterns. The images are manipulated using a range of digital tools available in the workplace. New images are created from existing images to suit the job requirements, using image manipulation techniques. Images are edited, formatted and saved in accordance with workplace practices. *Throughout the programme a portfolio of work is to be assembled by the trainee.* It must include at least ten jobs using a variety of images and manipulation techniques as evidence of competency and ensure they cover the range of skills required for the checklist.

### Unit 17923: Design and layout

#### Level 4 NQF Credit 40

Produce briefs and design documents; produce documents digitally. Proof documents and make corrections as required. Produce briefs and design documents. The brief identifies customer requirements for the production of a document in terms of use, purpose and target audience, and outlines the specifications (including constraints) required for the document to realise its purpose. Design and layout principles and practices are incorporated into the design of each document. These may include eye flow, balance, proportion, harmony, contrast, space, scale, alignment, proximity, consistency. Quality of graphics used meets the job specifications and may include tonal range, composition, resolution, clear cutting, colours, contrast, brightness, moiré patterns. *Throughout the programme a portfolio of work is to be assembled by the trainee for assessment.* It must include at least four documents which have been designed and digitally produced and which include single page, multi page, folded, single colour, duotone, multi colour, process colour as evidence of competency and ensure they cover the range of skills required for the checklist.

### Unit 17926: Preparing files for print

#### Level 4 NQF Credit 25

Prepare files for printing ensuring graphics are produced in the correct format for printing: appropriate colour space, duotone, spot, specials. Crop and printer marks are indicated on the file. This may include die cuts/trims, folds, perforations, register marks, grips, colour identification, colour bars, printer specifications, calibration wedges and bleeds. Unnecessary information is removed from files such as unused colours, paste-board elements, empty text boxes. All files, screen and printer fonts and digitised images are assembled appropriately to the storage medium. Any spot colours required are identified and a colour composite proof is produced. Files are opened, checked and saved to ensure they meet the job and print requirements: portable document format (PDF), tagged image file format (TIFF), encapsulated PostScript (EPS), spreads and chokes (trapping), screen angles, line rulings, carriers, impositions. *A portfolio of work is to be assembled by the trainee for assessment.* It must include at least four documents which include single colour, multi colour, process colour, trims, folds, registration marks that have been prepared for printing. This is used as evidence of competency and ensure they cover the range of skills required for the checklist.

*Level 4 Elective Units continued . . .*

## **Unit 23828: Large format printing**

### **Level 4 NQF Credit 20**

Media used in large format digital printing and inks used in large format inkjet printers. Print large format graphics using a range of different media. The media used in large format digital printing may include vinyl, canvas, paper, self-adhesive, card, fabrics, core flute, film and evidence is required for a minimum of four different media. Physical characteristics include grammage, calliper, coatings/finish, composition, texture, curl, adhesiveness, drying time, flame resistance, brightness, opacity. Image qualities include contrast, colour quality, colour gamut, gloss, matt, definition. Durability includes colour fastness, water-fastness, scuff/scratch resistance, indoors, outdoors, flame resistance, cracking. Uses may include indoors, outdoors, fine art, photography, poster, signage, exhibition, portable displays, ink types, printer compatibility, mounting, finishing. Types of inks such as dye inks, pigment inks, water based, solvent inks, eco-solvent inks, brand inks.

## **Unit 24514: Demonstrate knowledge of colour for digital printing**

### **Level 4 NQF Credit 20**

Colour gamut and colour spaces are described in terms of the relationship between them including RGB (red, green and blue), CMYK (cyan, yellow, magenta, black). ICC (International Colour Consortium) profiles are described in terms of colour space and purpose. Colour, as perceived by an observer, is described in terms of wavelengths of light, and the three types of cone cells in an observer's eyes. Light sources are described in terms of colour temperature. The perception of colour in objects is described in terms of wavelengths of light reflected by the object. The perception of colour from a monitor (display unit), is described, in terms of emitted light and the RGB colour model. Describe procedures for measuring colour for digital printing in accordance with workplace practices. Procedure for measuring monitor (display) colour is described in terms of transmitted light, analysed by a monitor optimiser. Procedure for measuring colour on a substrate is described in terms of reflected light and colour value (chromaticity) including spectrophotometers and delta E values. Procedure for measuring ambient light is described in terms of lux, candela and Kelvin.

## **Unit 24515: Create a colour managed process for digital printing**

### **Level 5 NQF Credit 20**

Analyse the working environment for light and the viewing of colour; create and apply profiles for equipment, and optimise software settings; test and adjust colour profiles and settings in accordance with workplace practices, to ensure a good colour match. Create and apply profiles for equipment, and optimise software settings to ensure job requirements are met. A monitor (display) profile is created and applied to ensure the monitor displays colour accurately. Colour settings in software applications used in the workplace are optimised. A printer profile is created and installed to ensure the printer output displays colour accurately. Printer is colour calibrated, and maintained, in accordance with the manufacturer's maintenance requirements. A test image is printed, compared with the monitor (display) image and analysed, and any variances in colour are noted. Adjustments are made to the printer and monitor profiles as necessary ensuring that a monitor (display) to print colour match is achieved in accordance with the job requirements.

## **LEVEL 4 COMPULSORY UNITS:**

### **Unit 20099: Solve problems on customer supplied files**

#### **Level 4 NQF Credit 40**

Solutions to common problems; identify, analyse and solve problems found on customer supplied files. It is expected that candidates undertaking this unit standard will complete a portfolio of work that indicates they have successfully completed the range of tasks specified in this unit standard. Problems found when opening a file, working on screen, printing a file. Types of problems: disc, links, fonts, colour, corrupt files, software, platform, resolution, size. Problems will be solved using Microsoft Office Suite and Photoshop (or similar) and at least two other publishing applications appropriate to the workplace.

### **Unit 20057: Business and quality principles**

#### **Level 3 NQF Credit 10**

Understanding of the purpose and functioning of a business; the factors contributing to production costs; the main components and factors involved in costing and estimating, and production planning principles; and of supervisory skills. Knowledge of the product to sell, profit, return on investment, investors, shareholders, cash flow, planning, budgets, quality control. Overall production costs: wages, materials, machinery, equipment, software, premises, administration, marketing. Effect of wastage is described in terms of profitability. Have an awareness of systems for recording stock movements. Charges including direct labour, materials and expenses; indirect labour, materials and expenses; administration expenses, marketing, machinery, equipment, outsourcing. Effect of down time is explained in terms of profitability.

### **Unit 23557: Advanced industry knowledge**

#### **Level 4 NQF Credit 15**

The characteristics of substrates used in digital printing that affect the product with evidence involving at least three substrates is required, such as: paper, card, vinyl, transparency, material. Learn about grammage, calliper, texture, smoothness, coatings, grain direction, colour, finish, material. Factors relating to the laying up of documents for the most economical digital printing are considered for different sized documents. This may include examples of at least four different non standard sizes such as A4, A3, AO, DLE single panel, DLE 3 fold, A5 folded, A4 multi-page, business cards, banners. The factors that determine the choice of digital print production process to meet customer requirements. Learn the basics of the GS1 bar coding system; the requirements for product bar coding tolerances. Have an awareness of technological changes in the digital print industry. The use of colour profiles in the printing processes.

*The following two elective units are NOT currently available but are planned to be in the near future:*

- **Variable data**  
This is using digital imaging to personalise a range of documents including both text and images. This unit is suitable for an operator of the press, not the IT specialist or the designer.
- **Digital illustration**  
This is about drawing illustrations using both vector and raster images.

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-If you have any questions, require further information, or would like a Training Liaison Officer to visit please contact:

**PrintNZ Training: Phone 0800 654 455**