Title	Demonstrate industry knowledge for screen printing
Level	3	Credits	12

Purpose	People credited with this unit standard are able to: define and use terms and vocabulary applicable to screen printing; describe use and application of halftones; demonstrate knowledge of the principles of design and layout; describe the machinery and equipment used in screen printing; use reference material to ensure procedures are followed and required standards are met; identify problems associated with static electricity and relative humidity and explain potential solutions; identify and describe the requirements of screen printing processes; explain colour theory and use colour terms; demonstrate knowledge of inks or dyes, and additives, and ink drying systems and equipment.

Classification	Printing > Printing - Screen

Available grade	Achieved

Guidance Information

1   Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:
- Hazardous Substances and New Organisms Act 1996;
- Health and Safety at Work Act 2015;
- Privacy Act 2020;
- Resource Management Act 1991.

Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

2   Definitions
Halftone refers to a printing technique that simulates continuous tone imagery through the use of dots.
Job requirements refer to specific requirements for the print job at hand. These requirements may or may not be covered in the job documentation and may include special instructions, quality requirements expected by the customer, and/or production standards of the print workplace and/or organisation.
Required standards refer to production standards set down by the workplace, and the quality standards expected by the customer for the finished product.

Workplace procedures refer to organisation policies and procedures that are documented in memo, electronic, or manual format and available in the workplace. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, manufacturer's requirements, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor's instructions, and procedures to comply with legislative and local body requirements relevant to the print sector.

3   Assessment information
     Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, workplace procedures and legislative requirements.

Outcomes and performance criteria

Outcome 1

Define and use terms and vocabulary applicable to screen printing.

Performance criteria

1.1   Define terms and vocabulary applicable to screen printing.

         Range   may include but is not limited to – blocking out, blocking, calliper, capillary film, cure, densitometer, direct emulsion, durometer, flash point, gray scale, halftone, lay marks, light fastness, mesh count, moiré pattern, off contact printing, film positive, register, relative humidity, retarder, screen angle, screen ruling, scum, spotting, static electricity, stencils, sublimation printing, transfer printing, viscosity.

1.2   Use terms and vocabulary applicable to the screen printing process being undertaken in the workplace.

Outcome 2

Describe use and application of halftones.

Performance criteria

2.1   Describe use of halftone and line film in terms of reproducing an original copy.

2.2   Describe halftone screen ruling applications for different kinds of substrates and methods of printing.

         Range   coarse screens, fine screens, moiré patterns.

Outcome 3

Demonstrate knowledge of the principles of design and layout.

Range   space, shape, symmetry, asymmetry, balance.

Performance criteria

3.1   Define the term 'layout' and explain the function and purpose of layout.

3.2   Explain the principles of design and layout in terms of job requirements.

Outcome 4

Describe the machinery and equipment used in screen printing.

Performance criteria

4.1   Describe machinery used in screen printing in terms of its functions and uses.

           Range   may include but is not limited to – flat hand fed, flat sheet gripper
                         fed, clamshell, web screen, semi automatic, automatic carousel,
                         hand and automatic for printing formed shapes, automatic multi
                         cylinder.

4.2   Describe equipment used in screen printing in terms of its functions and
           applications.

           Range   may include but is not limited to – enlarger, exposure lamp,
                         vacuum frame, light table, developers (tray and automatic);
                         washout unit, fabric stretching unit, screen machines,
                         densitometer, reclaiming units, frame cleaner, squeegee blade
                         sharpener, driers, static eliminators, guillotine, computer, film
                         processor, inkjet printer.

Outcome 5

Use reference material to ensure that procedures are followed and required standards are
met.

Range   may include but is not limited to – instruction manuals, maintenance manuals,
         spare parts manuals, videos, product specification information.

Performance criteria

5.1   Locate reference material applicable to the process and workplace.

5.2   Use reference material to ensure that machine operation and product use
           meets workplace requirements.

Outcome 6

Identify problems associated with static electricity and relative humidity and explain potential solutions.

Performance criteria

6.1 Identify problems related to static electricity and explain potential solutions.

Range substrate problems, static eliminators, temperature control.

6.2 Identify problems related to relative humidity and explain potential solutions.

Range substrate distortion, static, electronic equipment problems, ink problems, temperature control, relative humidity control units.

Outcome 7

Identify and describe the requirements of screen printing processes.

Performance criteria

7.1 Identify the requirements for screen printing production processes.

Range graphic pre-press, binding and finishing, paperboard packaging (carton), paperboard packaging (case).

7.2 Describe special printing requirements for print finishes used in the workplace.

Range may include but is not limited to – overglossing, laminating, waxing, ultraviolet (UV) coating, aqueous coating, blister packaging, hot foil stamping, overprinting.

7.3 Describe requirements for combining screen printing with other printing processes.

Range offset printing, letterpress printing, foil stamping, digital.

Outcome 8

Explain colour theory and use colour terms.

Performance criteria

8.1 Explain colour theory in terms of additive colours (red, green and blue light).

8.2 Explain colour theory in terms of subtractive colours (cyan, magenta and yellow pigments).

8.3 Explain the relationship between additive and subtractive colour ranges.

8.4 Use colour terms applicable to production processes in the workplace.

Range may include but is not limited to – chromatic, achromatic, mono chromatic, poly chromatic, colour, primary colours, secondary colours, tertiary colours, analogous colours, complementary colours, additive colours, subtractive colours, light fast, temperature, perspective, hue, brightness or value purity or chroma, intensity saturation.

8.5 Explain the importance of correct viewing conditions in the use of colour.

Outcome 9

Demonstrate knowledge of inks or dyes, and additives.

Range for any one of the following processes – flat sheet, fabric (panel), formed shapes.

Performance criteria

9.1 Identify screen printing inks or dyes used in the workplace and describe their characteristics.

9.2 Identify additives used in screen printing and explain their uses.

Outcome 10

Demonstrate knowledge of ink drying systems and equipment.

Performance criteria

10.1 Describe functions of the different ink drying systems used in screen printing.

Range evaporation, oxidation, thermosetting, catalysis, radiation curing.

10.2 Identify ink drying equipment used in screen printing and describe its uses.

Range rack, wicket, jet air, drying tunnel, ultra-violet (UV), infra-red (IR).

10.3 Describe factors affecting the drying process.

Range ink substrate, speed of printing, air temperature, humidity, light, radiation intensity.

Planned review date	31 December 2027

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 February 2005	31 December 2025
Rollover and Revision	2	12 December 2008	31 December 2027
Review	3	30 March 2023	N/A
Rollover and Revision	4	27 February 2025	N/A

Consent and Moderation Requirements (CMR) reference	0013

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.