Jabatan Pembangunan Kemahiran
Kementerian Sumber Manusia, Malaysia

# NATIONAL OCCUPATIONAL SKILLS STANDARD
*(STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN)*

C181-001-3:2023

## DIGITAL PRINTING PRODUCTION

*PRODUKSI PERCETAKAN DIGITAL*

LEVEL 3


Department of Skills Development (DSD)
Federal Government Administrative Centre
62530 PUTRAJAYA, MALAYSIA

NATIONAL OCCUPATIONAL SKILLS STANDARD

# DIGITAL PRINTING PRODUCTION

## *PRODUKSI PERCETAKAN DIGITAL*

## LEVEL 3

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# Preface

## Standard Definition

The National Occupational Skills Standard (NOSS) is a Standard document that outlines the **minimum** competencies required by a skilled worker working in Malaysia for a particular area and level of occupational, also the path to achieve the competencies. The competencies are based on the needs of employment, according to the career structure for the occupational area and developed by industry experts and skilled workers.

The National Competency Standard (NCS) is a Standard document that outlines the competencies required by a skilled worker in Malaysia.

## Description of Standard Components

The document is divided into three (3) components which includes: -

**Component I** **Standard Practice**
This component is about the information related to occupational area including introduction to the industry, Standard requirements, occupational structure, levelling of competency, authority and industry requirements as a whole.

**Component II** **Standard Content**
This component is a reference to industry employers in assessing and improving the competencies that is required for a skilled worker. The competencies are specific to the occupational area. The component is divided into two (2) section which are the chart (Competency Profile Chart, CPC) and details of the competencies (Competency Profile, CP).

**Component III** **Curriculum of Competency Unit**
This component is a reference for the training personnel to identify training requirements, design the curriculum, and develop assessment. The training hours that included in this component is based on the recommendations by the Standard Development Committee (SDC). If there are modifications to the training hours, the Department provides the medium for discussion and consideration for the matter.

## Abbreviation

| | | |
|---|---|---|
| 1 | 5R | Refuse, Reduce, Reuse, Repurpose, Recycle |
| 2 | AI | Artificial Intelligent |
| 3 | AR | As required |
| 4 | CAGR | Compound Annual Growth Rate |
| 5 | CP | Competency Profile |
| 6 | CPC | Competency Profile Chart |
| 7 | $CPC_{PdP}$ | Competency Profile Chart for Teaching & Learning |
| 8 | CU | Competency Unit |
| 9 | DOSH | Department of Occupational Safety and Health |
| 10 | FIFO | First In First Out |
| 11 | FOGRA | Fogra Graphic Technology Research |
| 12 | HEPA | High Efficiency Particulate Air |
| 13 | ICM | Image Colour Management |
| 14 | ILMIA | Institute of Labour Market Information and Analysis |
| 15 | IR | Industrial Revolution |
| 16 | IT | Industry Technological Advances |
| 17 | LAN | Local Area Network |
| 18 | LIFO | Last In First Out |
| 19 | M&A | Management & Administration |
| 20 | MIS | Management Information System |
| 21 | MSC | Malaysian Skills Certificate |
| 22 | MSDS | Material Safety Data Sheet |
| 23 | MSIC | Malaysian Standard Industrial Classification |
| 24 | NCS | National Competency Standard |
| 25 | NIP | Non-Impact Printing |
| 26 | OAS | Occupational Area Structure |
| 27 | OS | Occupational Structure |

| | | |
|---|---|---|
| 28 | OSH | Occupational Safety and Health |
| 29 | PDPA | Personal Data Protection Act |
| 30 | PO | Purchase Order |
| 31 | PPE | Personal Protective Equipment |
| 32 | PSDS | Product Safety Data Sheet |
| 33 | Q& A | Question & Answer |
| 34 | SBT | Scenario Based Training |
| 35 | SD | Sustainable Development |
| 36 | SHE | Safety, Health and Environmental |
| 37 | SLS | Service Level Standard |
| 38 | SOP | Standard Operating Procedure |
| 39 | TEM | Tool, Equipment and Materials |
| 40 | UGRA | Association for the Promotion of Research in the Graphic Arts |
| 41 | WAN | Wide Area Network |
| 42 | WIP | Work In Progress |

## Glossary

| | | |
|---|---|---|
| 1 | Artwork | An artistic process based on the principle of transferring images from a matrix onto another surface, most often paper or fabric. |
| 2 | Baseline | Imaginary horizontal line upon which stand capitals, lower case letters, punctuation points, etc. |
| 3 | Bleed | Printing that goes beyond the edge of where the sheet will be trimmed. In other words, the bleed is the area to be trimmed off. |
| 4 | Brochure | A pamphlet that is bound in booklet form. |
| 5 | Contrast | The degree of tonal separation or gradiation in the range from black to white. |
| 6 | Densitometer | An optical device used by printers to measure and control the density of colour. |
| 7 | Diagnose | A process to ascertain the root cause of the digital printer problem. diagnosing when the printer has developed some trouble refers to looking at some unusual symptoms that might give a clue as to where the problem lies. Depending upon the symptoms, causes and come to the root problem can be eliminated. |
| 8 | Die cut | A method of using sharp steel ruled stamps or rollers to cut various shape. |
| 9 | Digital printing | Digital printing uses high-resolution digital-based files to produce the image on the paper. This is in contrast to traditional offset printing, which relies on giant metal sheets that host the image. |
| 10 | Finishing process | Value-added operations that are performed after the ink has been applied to the paper such as anodizing, dyeing, electroplating, electroless plating, plating, powder coating, and spraying. |
| 11 | Profiling | A method which allows you to simulate and verify, how a given colour would look on a certain paper type after it leaves the printer which uses a stated colour type. |
| 12 | Quotation format | An editable document containing the prices of all the goods sold or services offered by a business, including a breakdown of these prices, discounts and implementation time. |
| 13 | Substrates | Raw materials used in digital printing industries such as papers, plastic, tarpaulin, etc. |
| 14 | Troubleshooting | A process of determining and remedying the causes of the symptoms. The fixing process of the problem after diagnosis has been made. |

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**Acknowledgement**

Director General of Department of Skills Development (DSD) would like to extend his gratitude to the National Skills Development Council (MPKK), Standard Technical Committee (JTS), Standard Technical Evaluation Committee (JTPS), Standard Development Committee (JPS), and organisation and individuals who have been involved directly or indirectly for the contribution, persistence, and support in the development of this Standard until it is completed.

**STANDARD PRACTICE**

**NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR:**

**DIGITAL PRINTING PRODUCTION**

**LEVEL 3**

## 1. Introduction

The printing industry in Malaysia is large and fragmented. It can be divided into three main printing segments: publication, commercial and packaging printing. In business, printing is used to help communicate information, demonstrate commercial advantage, create impact and make headlines. Printing uses eye-catching designs to help companies stand out in today's competitive marketplace. As well as in business, the printing sector produces large amounts of material for our education system, entertainment and other sectors. It serves every part of the Malaysian economy.

Global printing markets are changing, many publishing products have electronic versions replacing previously printed volumes. E-books, online newspapers and magazines are taking significant sections of their respective markets; while directories, catalogues and brochures have electronic alternatives; more transactions are electronic reducing demand for currency and cheques; and advertising spending is moving into new areas including online.

These factors, alongside the continued growth of social networking, result in declining volumes of many print products, but not packaging and labels where demand grows. Based on the article by printmalaysia.com, packaging and labels are growing consistently, while publication print volumes and values are declining significantly. In publication and commercial graphics, electronic media is steadily replacing printed products, thus resulting in print manufacturers being forced to implement efficient workflow and utilizing automation to minimize make-ready and lower waste, reducing demand for paper and inks.

As digital systems develop, there will be supply chain efficiencies such as reducing waste and unused packaging. Used mainly in the commercial print and labels segments, digital print is performing far better than long-established analogue alternatives. It will increase in market share as new applications grow (particularly in packaging). Several factors are driving the growth of digital printing. Although printing technology for offset processes continues to develop, their major developments in digital printing is particularly inkjet. In terms of application, digital printing will continue to grow in most print industry sectors.

Demand for printed products has continued to grow. This is despite predictions of a reduction, due to the impact of electronic media. The printing industry uses the latest technology. It needs bright, creative, enthusiastic people with wide-ranging skills. Printing companies become specialists in their field as different types of end products require slightly different machinery. The printing industry in Malaysia will continue to grow despite the advent of the challenges of electronic media or the internet. Malaysia has a rich printing legacy, and it is considered one of the oldest industries in the country. Endowed with strong government support and substantial human resources, this industry could expand through the cooperation among the government, printing companies and training centres.

## 1.1 Occupation Overview

Digital printing refers to direct printing methods from a digital-based image to various media. It usually refers to professional printing, where small-run jobs from desktop publishing and other digital sources are printed using large-format and/or high-volume laser or inkjet printers. Digital printing costs more per page than more traditional offset printing methods. However, this price is usually offset by avoiding the cost of all the technical steps required to make printing plates and producing fewer printing wastages. Other advantages of digital printing are the ability to print in such low volume, speedy turnaround time and the capability of doing variables data.

A digital printing production personnel perform activities such as perform digital printer colour profiling, printing activities related to production control including product quality assurance, provide maintenance support and supervise on technical matters and optionally responsible in ensuring customer satisfaction in line with company customer services policies. Digital printing senior technicians uses digital printer and software programs to produce outputs as per client request effectively. In fulfilling these requests, they may change many variables in the printer set-up, such as dimension, colour or contrast, monitor production processes are running as per schedule, machines are well maintained and also supervise the subordinate technical services in the production area. Often, successful digital printing production personnel have numerous printing projects going at the same time and create schedules to reflect these various deadlines.

Digital printing generally requires materials to be well stocked in order to operate effectively. Depending on the printing program and digital printers, operators may need to purchase and stock new ink cartridges/ toner, paper or other substrates. Efficient operators often use stock ordering schedules to keep up with work deadlines.

## 1.2 Rationale of NOSS Development

The need for knowledge workers and market-driven expertise will become more critical. The technology change and shortage of skilled workforce, need to be addressed more comprehensively, through NOSS development and industrial training. The previous Digital Printing Production Levels 2-3 was developed in 2014. This NOSS is reviewed to anticipate technology change and shortage of skilled workforce in this industry as well as to replace the previous NOSS format.

This is a revision of NOSS namely **PR-020-3:2014 Digital Printing Production & Supervision and F-090-3 Digital Printing Supervisor (NIP).** The revision process includes mapping the NOSS to compare and identify competencies relevant to the current industry needs. Consensus regarding job analysis and job matrix was obtained from the panellist, where thorough discussion and debates were conducted during several reviewing sessions. The reviewed sessions amended the Occupational Structure which now depicts the job titles in the industry and reflects the level's definition by the Department of Skills Development (DSD). A summary of Job Title comparisons between existing NOSS and new NOSS can be referred to Table 1.

Table 1: Job Title Comparison between Existing NOSS (Digital Printing Production & Supervision) and New NOSS (Digital Printing Production) Level 3

| | | Existing NOSS | New NOSS |
|---|---|---|---|
| NOSS Title | | PR-020-3:2014 Digital Printing Production & Supervision and F-090-3 Digital Printing Supervisor (NIP) | C181-001-3-2023 Digital Printing Production |
| | | Job Title | |
| Level | Level 3 | Digital Printing Technical Supervisor | Digital Printing Senior Technician |
| | Level 2 | Digital Printing Operator | Digital Printing Technician |
| | Level 1 | N/A | Digital Printing Operator |

The results of the existing NOSS review found that the competencies are still relevant to the industry's current needs. However, the term for materials in competency Carry Out Incoming Material Inspection changed to Carry Out Incoming Raw Material Inspection.

The development panel decided that it needed to be changed due to the industry standard term for digital printing industry. The new activity is Verify finishing processes included in CU02 to control the quality of finished products. The revision also due to the current nature of the job and other new activities introduced to new market demand which requires the latest technology, business trends and government policy, towards Industrial Revolution 4.0 (IR 4.0) and Sustainable Development Goals (SDG), which necessitate competency in a variety of challenges in digital printing production and tasks involved in a wide range of contexts and industry expectations.

Activity to verify product quality was renamed to perform quality inspection due to the diversification of tasks starting from the beginning of the process till the end of production. A summary of competency comparisons between existing NOSS and new NOSS can be referred to Table 2.

Table 2: Competency Comparison between Existing NOSS (Digital Printing Production & Supervision) and New NOSS (Digital Printing Production) Level 3

| NOSS | C181-001-3-2023 Digital Printing Production | | | | | | |
|---|---|---|---|---|---|---|---|
| PR-020-3:2014 Digital Printing Production & Supervision and F-090-3 Digital Printing Supervisor (NIP) | Competency Unit | Perform Digital Printer Colour Profiling | Perform Digital Printing Production Control | Perform Digital Printing Quality Assurance | Perform Digital Printing Maintenance Support | Perform Digital Printing Technical Supervision | Perform Digital Printing Customer Services |
| | PR-020-3:2014-C01 Digital Printer Colour Profiling | x | | | | | |
| | PR-020-3:2014-C02 Digital Printing Production Control | | x | | | | |
| | PR-020-3:2014-C03 Digital Printing Quality Assurance | | | x | | | |
| | PR-020-3:2014-C04 Digital Printing Technical Support | | | | x | | |
| | PR-020-3:2014-C05 Digital Printing Supervision | | | | | x | |
| | PR-020-3:2014-E01 Digital Printing Customer Services | | | | | | x |

## 1.3 Rationale of Occupational Structure and Occupational Area Structure

In view of the complexity of the process, technology advancement, and the industry practice, the NOSS development committee has come to a consensus that according to MSIC 2008, the NOSS is classified in (Section C) Manufacturing. The 3-digit code closely matches for the NOSS is (Group 181) Printing and Service Activities Related to Printing. The Occupational Job Structures for Printing Sector were also referred to in determining the section and group for this job title. The identified job areas are Digital Printing.

The outcome from job analysis has shown that in digital printing, there are differences of job functions and competencies for Level 1, 2 and Level 3 personnel. The embedded competencies in digital printing starts at Level 2. Therefore, the NOSS development committee members decided that the job areas are separated between level 2 and 3. The separation of level 3 competencies as to produce specified Competency Units which will fulfil the industry demands. The current Occupational Structure and Occupational Area Structure are depicted in Figure 1 and 2.

## 1.4 Regulatory/Statutory Body Requirements Related to Occupation

Printing being a regulated industry in this country, it is understandable that foreign participation in printing projects has to be controlled. All printing companies whether local or with foreign participation must apply for Printing License from the Ministry of Home Affairs (KDN) with conditions imposed in the license to be complied with.

a) Printing Press and Publications Act 1984.
b) Occupational Safety and Health Act 1994.
c) Environmental Protection Act 1974 (Act 127).
d) Labour Act 1955 (Act 265).
e) Industrial Relation Act 1967.
f) Personal Data Protection Act 2010 (PDPA)

## 1.5 Occupational Prerequisite

The minimum requirements set forth by the industry for any interested individual to undertake the job or career in this area are as follows:

a) 18 years of age and above (Employment Act 1955 – Act 265); and
b) Medically fit (certified by Medical Officer or Occupational Health Doctor).

## 1.6 General Training Prerequisite for Malaysian Skills Certification System

The prerequisite for the enrolment of this programme is possessed Malaysian Skills Certificate (MSC) in Digital Printing Technical Services Level 2.

## 2. Occupational Structure (OS)

| Section | (C) Manufacturing | | |
|---|---|---|---|
| Group | (181) Printing and Service Activities Related to Printing | | |
| Area | Press Printing | Digital Printing | Post-Press Printing |
| Level 5 | Press Operation Manager | Digital Printing Manager | Post-Press Operation Manager |
| Level 4 | Press Executive | Digital Printing Executive | Post-Press Executive |
| Level 3 | Press Senior Technician | Digital Printing Senior Technician | Post-Press Senior Technician |
| Level 2 | Press Technician | Digital Printing Technician | Post-Press Technician |
| Level 1 | Press Assistant Technician | Digital Printing Operator | Post-Press Assistant Technician |

Figure 1: Occupational Structure for Digital Printing

## 3. Occupational Area Structure (OAS)

| Section | (C) Manufacturing | | |
|---|---|---|---|
| Group | (181) Printing and Service Activities Related to Printing | | |
| Area | Press Printing | Digital Printing | Post-Press Printing |
| Level 5 | Press Operation Management | Digital Printing Management | Post-Press Operation Management |
| Level 4 | Press Operation Administration | Digital Printing Administration | Post- Press Operation Administration |
| Level 3 | Press Production | Digital Printing Production | Post-Press Production |
| Level 2 | Press Operation | Digital Printing Technical Services | Post Press Operation |
| Level 1 | Embedded to L2 | Embedded to L2 | Embedded to L2 |

Figure 2: Occupational Area Structure for Digital Printing

## 4. Definition of Competency Levels

The NOSS is developed for various occupational areas. Below is a guideline of each NOSS Level as defined by the Department of Skills Development, Ministry of Human Resources, Malaysia.

Level 1: Competent in performing a range of varied work activities, most of which are routine and predictable.

Level 2: Competent in performing a significant range of varied work activities, performed in a variety of contexts. Some of the activities are non-routine and required individual responsibility and autonomy.

Level 3: Competent in performing a broad range of varied work activities, performed in a variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required.

Level 4: Competent in performing a broad range of complex technical or professional work activities performed in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and allocation of resources is often present.

Level 5: Competent in applying a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of others and for the allocation of substantial resources features strongly, as do personal accountabilities for analysis, diagnosis, planning, execution and evaluation.

## 5. Award of Certificate

The Director General may award, to any person upon conforming to the Standards the following skills qualifications as stipulated under the National Skills Development Act 2006 (Act 652):

a) Malaysian Skills Certificate (MSC); or
b) Statements of Achievement

## 6. Occupational Competencies

The Digital Printing Production Level 3 personnel is competent in performing the following core competencies:

a) Perform digital printer colour profiling;
b) Perform digital printing production control;
c) Perform digital printing quality assurance;
d) Perform digital printing maintenance support; and
e) Perform digital printing technical supervision.

For added value, the Digital Printing Production Level 3 personnel is competent in performing the following elective competencies: -

a) Perform digital printing customer services.

## 7. Work Conditions

Generally, they work under normal working hour from morning to evening depending on organisation nature of business. They may be required to work extra hours and in shift to fulfil internal and external requirement. They may work individually or in a group and need to use / wear appropriate attire during the commencement of their jobs. The occupation requires proper physical fitness & alertness, good communication skill, cooperative and ability to understand and execute work instructions from superior.

## 8. Employment Prospects

The Malaysian Printing Industry has played a significant role as the primary media for education, communication and dissemination of knowledge and information. Malaysian printing and publishing business is expected to continue its growth as the nation aspires to be fully developed and industrialized by 2020. The industry is constantly working to improve turnaround time, and many have invested in state-of-the-art technology to provide in-house finishing and bindery services. Many printers and publishers also stay abreast of new developments in printing and publishing technology, which have dramatically increased efficiency and productivity, as well as export competitiveness. Malaysia’s existing institutional architecture has sustained consistent productivity growth for more than two decades, though challenges need to be addressed in order to refocus attention on productivity growth. These challenges include overcoming skills gaps, maintaining high-quality infrastructure, strengthening the research and development ecosystem, and addressing distortions in output markets.

According to the Department of Statistics, the labour demand in the economic sector during the first quarter of 2022 increased to 8.572 million (Q1 2021:8.424 million). The rate of filled jobs was 97.8 percent encompassing a total of 8.388 million filled jobs while the number of job vacancies was 184 thousand with a rate of 2.2 percent (Q1 2021:178 thousand).

Additionally, the number of jobs created also went up to 25.84 thousand in this quarter (Q1 2021:17.38 thousand). C259-008-3:2022 8/163 When analysing the labour demand by skill category, the number of jobs in the semi-skilled category made up 62.3 percent of total jobs or 5.344 million jobs. Meanwhile, the skilled and low-skilled categories registered 24.7 and 13.0 percent respectively. In the skilled category, there were 2.072 million filled jobs, an increase of by 51 thousand jobs as compared to the same quarter of the previous year (Q1 2021:2.021 million) with a rate of 97.9 percent, whereas job vacancies recorded 44.9 thousand or 2.1 percent rate of job vacancies. A total of 8.0 thousand jobs were created in this category.

Semi-skilled category posted 5.242 million filled jobs at a rate of 98.1 percent and 1.9 percent of job vacancies (102.2 thousand). There were 15.2 thousand jobs created in this category. In the meantime, filled jobs in the low-skilled category increased by 0.3 percent to 1.073 million compared to the same quarter of the preceding year (Q1 2021:1.070 million). The number of job vacancies accounted for 37.3 thousand vacancies with a rate of 3.4 percent. A total of 2.6 thousand jobs were created in this category.1

Based on the official statistics of the Ministry of Home Affairs there are currently more or less 2826, printing-related enterprises registered with the Ministry. It must be highlighted that the number of printing-related enterprises registered with the ministry fluctuates frequently due to the number of applications. Most of these enterprises are in towns, cities, and commercial centres. In recent years, keeping with the country's economic development, packaging printing, in particular, has seen the most significant growth momentum. The digital printing market is growing at a Compound Annual Growth Rate (CAGR) of 6.56% over the next 5 years. Asia Pacific is growing at the highest CAGR over 2021- 2026.[2]

The Printing Industry provides a steady economic impact to the nation, whereas concurrently, advancements in the different areas of the Printing Industry will be required to meet these demands. In order to increase productivity and quality output, workers in the industry must enhance their skill sets and possess relative skills in emerging areas of production.

There are excellent prospects in the private sector due to the shortage of hands-on experts in digital printing. Digital Printing Production L3 personnel trained under this training program is eligible to be employed in the printing sector. This area has an excellent job market potential domestically for skilled personnel due to the shortage of such highly skilled personnel in Malaysia.

[1] Employment Statistics First Quarter 2022, Department of Statistics Malaysia Official Portal (dosm.gov.my), Retrieved on 7/10/2022,11.00 am.

[2] https://www.mordorintelligence.com/industry-reports/digital-printing-market. Retrieved on 27/03/2023,11.00 am.

Occupation with respect to employment opportunities is:

- Digital Printing Assistant Manager.
- Digital Printing Instructor/ Trainer.
- Digital Printing Sales & Trading Operator.
- Advertising Executive.
- Digital Media Content Executive.

Industries with respect to employment opportunities are:

- Media companies.
- Printing and publishing companies.
- Education & Training.
- Manufacturing.
- Equipment Services.
- Corporate and government bodies.
- Quick print shop.

According to the Institute of Labour Market Information and Analysis (ILMIA), Department of Statistics Malaysia and other references, the average salary for Digital Printing Production Personnel in Malaysia is RM2000-RM3500 inclusive of allowances and other incentives per month. The actual amount of salary offered depends on the size of the employer's operations, skill level and work experience.[3]

## 9. Up Skilling Opportunities

Career path in digital printing production depends on the type and size of organisation. In general, there will be more career development opportunities with larger employers. Most of competent Digital printing production personnel enhance their job competency on the job. They usually begin in a junior position and gradually learn their new skills as they gain experience.

For career advancement, they may enhance their knowledge and skill by attending professional courses offered by recognised education providers such as Digital Print Professional and Colour Management Professional (CMP).

[3] MyJobProfile (Labour Market Information Data Warehouse) - Printers (ilmia.gov.my), Retrieved on 7/10/2022,11.00 am.

## 10. Organisation Reference for Sources of Additional Information

The following organisations can be referred as sources of additional information which can assist in defining the document's contents.

a) Kementerian Dalam Negeri (KDN)
Blok D1, D2, D7 & D9, Kompleks D,
Pusat Pentadbiran, Kerajaan Persekutuan,
62546 Putrajaya
03 8000 8000
03 88891613 / 03 88891610
pro@moha.gov.my

b) Department of Occupational Safety and Health (DOSH)
Level 1, 3, 4 & 5 Block D4
Complex D, Federal Government Administrative Centre
62530 Putrajaya
+603 8000 8000
projkkp@mohr.gov.my

c) SIRIM
No. 1, Persiaran Dato' Menteri, Seksyen 2
Peti Surat 7035, 40700 Shah Alam
Selangor Darul Ehsan
+603 5544 6000
web@sirim.my

d) Malaysia Printers Association of Malaysia
No. 42-1, Jalan 11/34A
Kepong Entrepreneurs Park
Batu 7, Jalan Kepong
52100 Kuala Lumpur, Malaysia.
+603 6251 2187
malaysiaprintersassociation@gmail.com

e) Malay Entrepreneur Printing Association of Malaysia
7-1 Block K2
Jalan 3/1
Taman Seri Merdeka
68000 Ampang
Selangor
+603 4295 3010

f) Selangor and Federal Territory Chinese Printing Presses' Association
1st Floor, No 56 Jln Radin Anum 1
Bandar Baru Sri Petaling
57000 Kuala Lumpur
+603 9057 2532
beltech@tm.net.my

g) Fogra Graphic Technology Research Association (FOGRA)
Fogra Forschungsgesellschaft Druck e.V.
Streitfeldstraße 19
81673 München
+49 8943182-214
https://fogra.org/en/
contact@fogra.org

h) Association for the Promotion of Research in the Graphic Arts Industry (UGRA)
Lerchenfeldstr 5
CH-9014 St. Gallen
+41 712747473

## 11. Standard Technical Evaluation Committee

| NO | NAME | POSITION & ORGANISATION |
|---|---|---|
| CHAIRMAN | | |
| 1 | Norazmi bin Mokni | Principal Assistant Director<br>Department of Skill Development |
| EVALUATION PANEL | | |
| 1 | Aniza binti Ahmad | Assistant Vocational Training Officer<br>Institut Latihan Perindustrian<br>Kuala Lumpur |
| 2 | Nor Aziaty binti Ahmad | Managing Director<br>DE Dinar Enterprise Sdn. Bhd. |
| 3 | Mohamad Fadhali bin Mohamed Yusop | Manager<br>Ultimate Print (M) Sdn. Bhd. |
| 4 | Kamarruzaman bin Mohd Supian | Senior Production Executive<br>MCC Label's (Kuala Lumpur) |
| 5 | Badrol Hisham bin Mohd Noh | Consultant<br>Percetakan Watan Sdn. Bhd. |
| SECRETARIAT | | |
| 1 | Faizatun Izzah binti Zohedi | Assistant Director<br>Department of Skill Development |

## 12. Standard Development Committee

### DIGITAL PRINTING PRODUCTION

### LEVEL 3

| NO | NAME | POSITION & ORGANISATION |
|---|---|---|
| DEVELOPMENT PANEL | | |
| 1 | Hasnah binti Patang Nagari | Assistant Vocational Training Officer<br>Institut Latihan Perindustrian Kuala Lumpur |
| 2 | Mohd Adam bin Jab | Assistant Vocational Training Officer<br>Institut Latihan Perindustrian Arumugam Pillai Nibong Tebal, Pulau Pinang |
| 3 | Muhamad Fadlishah bin Rusli | Managing Director<br>Akar Digital Sdn. Bhd.<br>Selangor |
| 4 | Zarimah binti Hasan | Managing Director<br>Idaman Print Sdn. Bhd.<br>Kuala Lumpur |
| 5 | Abdul Manaf bin Yaacob | General Manager<br>Nasyrul Quran<br>Putrajaya, Wilayah Persekutuan |
| 6 | Ahmad Tarmizi bin Abdul Rahman | Business Development & SLDN Manager, Coach<br>Akar Digital Sdn. Bhd., Selangor |
| 7 | Mohamad Irfan bin Ismail | Manager<br>Kejar Pelangi (Kilangpakaian.com)<br>Selangor |
| 8 | Nik Anita binti Nik Sulaiman | Manager<br>Suha Design and Printing Sdn. Bhd.<br>Selangor |
| 9 | Razlan bin Rusli | Sales Manager<br>Tahan Press,<br>Kuala Lumpur |
| FACILITATOR | | |
| 1 | Siti Salmah binti Mohd Nor | Ciast/PPL/FDS-0077/2013<br>Precious Galaxy Sdn. Bhd. |

**STANDARD CONTENT**

**NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR:**

**DIGITAL PRINTING PRODUCTION**

**LEVEL 3**

## 13. Competency Profile Chart (CPC)

| | | | |
|---|---|---|---|
| SECTION | (C) MANUFACTURING | | |
| GROUP | (181) PRINTING AND SERVICE ACTIVITIES RELATED TO PRINTING | | |
| AREA | DIGITAL PRINTING | | |
| NOSS TITLE | DIGITAL PRINTING PRODUCTION | | |
| NOSS LEVEL | THREE (3) | NOSS CODE | C181-001-3:2023 |

| | ↤COMPETENCY UNIT↦ | ↤WORK ACTIVITIES↦ | | | |
|---|---|---|---|---|---|
| CORE | PERFORM DIGITAL PRINTER COLOUR PROFILING | CHECK PRINTER COLOUR PROFILING REQUIREMENTS | CARRY OUT PRINTER PROFILING PREPARATION | CARRY OUT PRINTER COLOUR PROFILING | |
| | C181-001-3:2023-C01 | C181-001-3:2023-C01-W01 | C181-001-3:2023-C01-W02 | C181-001-3:2023-C01-W03 | |
| | PERFORM DIGITAL PRINTING PRODUCTION CONTROL | CHECK PRODUCTION CONTROL REQUIREMENTS | MONITOR DIGITAL PRINTING PRODUCTION | CONTROL DIGITAL PRINTING PRODUCTION WASTAGE | CARRY OUT FINISHING PROCESS VERIFICATION |
| | C181-001-3:2023-C02 | C181-001-3:2023-C02-W01 | C181-001-3:2023-C02-W02 | C181-001-3:2023-C02-W03 | C181-001-3:2023-C02-W04 |

| ↤COMPETENCY UNIT↦ | | ↤WORK ACTIVITIES↦ | | | |
|---|---|---|---|---|---|
| CORE | PERFORM DIGITAL PRINTING QUALITY ASSURANCE | CARRY OUT INCOMING RAW MATERIAL INSPECTION | CARRY OUT DIGITAL PRINTER SETUP VERIFICATION | CARRY OUT PRODUCT SAMPLE VERIFICATION | CARRY OUT FINAL PRODUCT QUALITY INSPECTIONS |
| | C181-001-3:2023-C03 | C181-001-3:2023-C03-W01 | C181-001-3:2023-C03-W02 | C181-001-3:2023-C03-W03 | C181-001-3:2023-C03-W04 |
| | PERFORM DIGITAL PRINTING MAINTENANCE SUPPORT | CARRY OUT DIGITAL PRINTER FAULTY INSPECTIONS | CARRY OUT DIGITAL PRINTER DIAGNOSTIC PROCESS | CARRY OUT DIGITAL PRINTER TROUBLESHOOTING PROCESS. | COORDINATE DIGITAL PRINTING MACHINE MAINTENANCE |
| | C181-001-3:2023-C04 | C181-001-3:2023-C04-W01 | C181-001-3:2023-C04-W02 | C181-001-3:2023-C04-W03 | C181-001-3:2023-C04-W04 |
| | PERFORM DIGITAL PRINTING TECHNICAL SUPERVISION | PREPARE OPERATION WORK SCHEDULE | MAINTAIN PRODUCTION STOCK INVENTORY | PREPARE PRODUCTION REPORTS | CONDUCT ON-JOB TECHNICAL TRAINING |
| | C181-001-3:2023-C05 | C181-001-3:2023-C05-W01 | C181-001-3:2023-C05-W02 | C181-001-3:2023-C05-W03 | C181-001-3:2023-C05-W04 |

| ↤COMPETENCY UNIT↦ | | ↤WORK ACTIVITIES↦ | | | |
|---|---|---|---|---|---|
| ELECTIVE | PERFORM DIGITAL PRINTING CUSTOMER SERVICES | HANDLE CUSTOMER ENQUIRIES | PREPARE SALES DOCUMENTATION | HANDLE CUSTOMER FEEDBACK | CARRY OUT ONLINE WEB-TO-PRINT SERVICES |
| | C181-001-3:2023-E01 | C181-001-3:2023-E01-W01 | C181-001-3:2023-E01-W02 | C181-001-3:2023-E01-W03 | C181-001-3:2023-E01-W04 |

## 14. Competency Profile (CP)

| | | | |
|---|---|---|---|
| SECTION | (C) Manufacturing | | |
| GROUP | (181) Printing and Service Activities Related to Printing | | |
| AREA | Digital Printing | | |
| NOSS TITLE | Digital Printing Production | | |
| NOSS LEVEL | Three (3) | NOSS CODE | C181-001-3:2023 |

| | |
|---|---|
| CU TITLE & CU CODE | Perform digital printer colour profiling.<br>C181-001-3:2023-C01 |
| CU DESCRIPTOR | Perform digital printer colour profiling describes the process to measure and/or adjust the colour response of a device against substrate, ink and condition of the machine to do colour matching. This is the basis for colour characterisation of the device against substrate, ink and condition of the machine. Colour matching and profiling are done according to printer manual and standard colour target value requirements.<br><br>The person who is competent in this CU should be able to check printer colour profiling requirements, carry out printer profiling setup and carry out printer colour profiling.<br><br>The outcome of this CU is to ensure colour quality inclusive consistency throughout different substrates in accordance printer manual and standard colour target value requirements. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| 1. Check printer colour profiling requirements. | 1.1 Determine colour standards requirements.<br>1.2 Identify colour profiling requirements.<br>1.3 Interpret printer colour profiling and colour matching procedure. | 1.1 Colour standards such as Fogra, Ugra and ISO 12647 confirmed based on customer requirements.<br>1.2 Colour profiling requirements including matching intent, colour format determined in accordance with colour standards.<br>1.3 Colour matching procedure determined based on colour profiling requirements.<br>1.4 Printer baseline status confirmed in accordance with printer standard. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| | 1.4 Determine printer baseline status.<br>1.5 Determine printer colour profiling tools/equipment.<br>1.6 Identify substrates characteristic.<br>1.7 Check colour matching intent. | 1.5 Printer colour profiling tools/equipment including Spectro photometer/Densitometer/Light table confirmed in accordance with type of profiling software.<br>1.6 Characteristics of substrates such as optical density and gloss level for colour profiling confirmed in accordance with job docket.<br>1.7 Digital printing colour matching intent such as offset matching, press-to -press matching, customer proof matching, intended product application (magazine, billboard, indoor/outdoor usage, etc.) confirmed in accordance with job docket. |
| 2. Carry out printer profiling preparation. | 2.1 Check consumables items conditions.<br>2.2 Execute substrates setup.<br>2.3 Execute printer profiling program setup.<br>2.4 Execute profiling test chart.<br>2.5 Verify profiling tools/device functionality. | 2.1 Drum/ toner/ ink and other related consumables items quantity status displayed on machine panel and manufacturing expiry date confirmed in accordance with printer specification.<br>2.2 Substrate setting confirmed and positioned/placed in accordance with job docket and printer manual.<br>2.3 Printer profiling program setting completed in accordance with profiling procedure.<br>2.4 Profiling test chart printed out in accordance with printer specification.<br>2.5 Profiling tools/device functionality confirmed in accordance with profiling procedure. |
| 3. Carry out printer colour profiling. | 3.1 Determine colour profiling target.<br>3.2 Determine colour measurement tools.<br>3.3 Execute scanning with profiling devices.<br>3.4 Execute data input.<br>3.5 Update profiling values into digital printer server. | 3.1 Colour profiling targets including Fogra, Ugra, ISO 12647 identified in accordance with customer requirement and job docket.<br>3.2 Type of colour measurement tools selected and used correctly in accordance with test chart printing procedure.<br>3.3 Scanning with profiling devices executed in accordance with printer manual.<br>3.4 Data input collected and profiles created based on different types of substrates. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| | 3.6 Reprint revised profiling test chart.<br>3.7 Verify revised profiling test chart. | 3.5 Profiling values information updated into digital printer server in accordance with printer manual.<br>3.6 Revised profiling test chart printed results confirmed in accordance with test chart printing procedure.<br>3.7 Revised profiling test chart values confirmed against the colour target values in accordance with test chart printing procedure. |

| | |
|---|---|
| CU TITLE & CU CODE | Perform digital printing production control.<br>C181-001-3:2023-C02 |
| CU DESCRIPTOR | Perform digital printing production control describes the procedure for scheduling, dispatching, and expediting the flow of materials within a production, from the raw state to the finished product, in an orderly and efficient manner and monitoring the entire operational activities.<br><br>The person who is competent in this CU should be able to check production control requirements, monitor digital printing production, control digital printing production wastages and carry out finishing process verification.<br><br>The outcome of this CU is to ensure production efficiency by controlling the production workflow and employee performance in order to meet operation schedules and productivity in accordance with planned schedule, customer requirements and company Standard Operating Procedure (SOP). |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| 1. Check production control requirements. | 1.1 Obtain planned schedule.<br>1.2 Interpret job docket.<br>1.3 Determine printing productivity.<br>1.4 Identify availability of resources.<br>1.5 Determine workflow/work in progress (WIP) of production process. | 1.1 Planned schedule format identified and retrieved in accordance with company SOP.<br>1.2 Job specifications including special request, type of format and type of substrates, type of finishing) identified in accordance with job docket.<br>1.3 Printing productivity confirmed based on availability of resources (manpower, materials, machines).<br>1.4 Availability of resources including manpower, materials, machines confirmed in accordance with job docket.<br>1.5 Workflow/work in progress (WIP) process determined in accordance with company standards and procedure. |
| 2. Monitor digital printing production. | 2.1 Interpret production schedule.<br>2.2 Interpret printing regulatory/ authority requirements.<br>2.3 Observe printing productivity. | 2.1 Production schedule information such as date, running shift, type of printers identified in accordance with production requirements.<br>2.2 Safety, Health and Environmental (SHE) guidelines and legislation Act identified and adhered to in accordance with OSHA requirements. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| | 2.4 Handle digital printer malfunction.<br>2.5 Notify production productivity status.<br>2.6 Request productivity feedback.<br>2.7 Produce production monitoring report. | 2.3 Printing productivity results compared with targeted planning and production schedule in accordance with company SOP.<br>2.4 Digital printer malfunction rectified/fixed/or forwarded for further action (if major issues) in accordance with company SOP and printer manual.<br>2.5 Production productivity status including improvement plan informed to subordinate in accordance with company SOP.<br>2.6 Printing productivity feedback inclusive improvement ideas gathered from subordinates in accordance with company SOP.<br>2.7 Production report format determined, final data updated, supporting documents attached and reports generated in accordance with company SOP and reporting format. |
| 3. Control digital printing production wastage. | 3.1 Compile production report.<br>3.2 Estimate production wastages.<br>3.3 Analyse production wastages.<br>3.4 Identify causes of abnormal wastages.<br>3.5 Recommend remedial/ correction action. | 3.1 Production report format and daily production rates identified and retrieved in accordance with company SOP.<br>3.2 Production wastages calculated in accordance with calculation method/formula.<br>3.3 Production wastage data documented and productivity efficiency evaluated based on wastage record.<br>3.4 Causes of abnormal wastages such as printer malfunction, substrates defect (folded, misaligned, torn, etc) identified in accordance with SOP.<br>3.5 Remedial/corrective action strategy and plan proposed to superior in accordance with SOP. |
| 4. Carry out finishing process verification. | 4.1 Determine finishing process specification.<br>4.2 Check printing substrates.<br>4.3 Check finishing methodology<br>4.4 Check type of finishing category. | 4.1 Finishing process specification inclusive type of finishing confirmed in accordance with job specifications.<br>4.2 Printing substrates specification including types, sizes, thickness confirmed in accordance with job specifications.<br>4.3 Type of finishing machine, methodology and functions suitability confirmed in accordance with job specifications. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| | 4.5 Check type of finishing machines.<br>4.6 Verify final finished goods. | 4.4 Types of finishing categories including folding, binding, trimming, punching and die cut/laser-cutting confirmed in accordance with job specifications.<br>4.5 Types of finishing machines for folding, binding, trimming, punching and die cut/laser-cutting confirmed in accordance with job specifications.<br>4.6 Final finished goods acceptance confirmed in accordance with job specifications. |

| | |
|---|---|
| CU TITLE & CU CODE | Perform digital printing quality assurance.<br>C181-001-3:2023-C03 |
| CU DESCRIPTOR | Perform digital printing quality assurance describes the implementation of quality standards in digital printing operation so that the products and services provided meet the customer and company requirements.<br><br>The person who is competent in this CU should be able to carry out incoming raw material inspection, carry out digital printer setup verification, product sample verification and carry out product quality inspections.<br><br>The outcome of this CU is to ensure that products and services meet quality standards in accordance with customer requirements, and company Standard Operating Procedure (SOP). |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| 1. Carry out incoming raw material inspection. | 1.1 Identify type of raw materials.<br>1.2 Interpret raw materials inspection procedure.<br>1.3 Check raw materials specifications.<br>1.4 Check raw materials quality and quantity.<br>1.5 Check raw materials storage requirements.<br>1.6 Ensure storage environment compliance.<br>1.7 Update raw materials quality and quantity checklist. | 1.1 Type of raw materials including substrates, toners and ink cartridges identified in accordance with procurement procedure.<br>1.2 Raw materials inspection procedure confirmed to in accordance with company SOP and SHE guidelines.<br>1.3 Material specification (expiry date, lifespan and raw material type) confirmed in accordance with material safety data sheet (MSDS). and purchase order.<br>1.4 Material quality and quantity confirmed in accordance with material specification and inventory record.<br>1.5 Material storage requirement inclusive size, safety and suitability for substrates specification identified in accordance with SOP.<br>1.6 Storage environment assured in accordance with storage procedure and SHE.<br>1.7 Raw materials quality and quantity checklist format confirmed and utilised in accordance with recording format. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| 2. Carry out digital printer setup verification. | 2.1 Check digital printer setting requirements.<br>2.2 Verify final artwork setting.<br>2.3 Verify pre-flighting.<br>2.4 Verify digital server setting parameter.<br>2.5 Verify printer setup parameter.<br>2.6 Verify test print result. | 2.1 Digital printer setting parameters confirmed in accordance with customer requirements.<br>2.2 Final artwork setting status confirmed in accordance with job docket.<br>2.3 Pre-flighting (printability, design errors) confirmed in accordance with customer requirements and standard requirements.<br>2.4 Server setting parameter confirmed in accordance with printer manual.<br>2.5 Printer setup parameter confirmed in accordance with printer manual.<br>2.6 Test print results evaluated in accordance with job specifications. |
| 3. Carry out product sample verification. | 3.1 Interpret sample/mock-up quality inspection standard.<br>3.2 Verify sample/mock-up printing quality.<br>3.3 Verify sample/mock-up finishing quality.<br>3.4 Update sample/mock-up quality inspection checklist. | 3.1 Sample mock-up quality inspection standard determined in accordance with type of product.<br>3.2 Sample/mock-up printing quality inspected and confirmed in accordance with job docket and customer requirements.<br>3.3 Sample/mock-up finishing quality inspected and confirmed in accordance with job docket and customer requirements.<br>3.4 Sample/mock-up quality inspection checklist completed in accordance with recording format. |
| 4. Carry out final product quality inspections. | 4.1 Interpret product quality inspections requirements.<br>4.2 Determine quality inspections tools and materials.<br>4.3 Inspect final product quality.<br>4.4 Record product quality inspections results. | 4.1 Product quality inspection procedures and standards determined in accordance with company quality assurance procedure.<br>4.2 Quality inspection tools, materials and checking method applied in accordance with product specification.<br>4.3 Final product quality including final finishing output confirmed in accordance with job docket and customer requirements.<br>4.4 Product quality inspection information results, quality issues and recommended countermeasure/corrective action documented and completed in accordance with format. |

| | |
|---|---|
| CU TITLE & CU CODE | Perform digital printing maintenance support.<br>C181-001-3:2023-C04 |
| CU DESCRIPTOR | Perform digital printing maintenance support describes technical inspections on breakdown/malfunctioning machines, isolation of root cause and rectification of technical issues that arise during machine operations.<br><br>The person who is competent in this CU should be able to carry out digital printer faulty inspections, carry out printer diagnostic process, carry out digital printer troubleshooting process and coordinate digital printing machine maintenance.<br><br>The outcome of this CU is to minimise interruption to production and allow for greater efficiencies with digital printing equipment in accordance with printer manual, and company Standard Operating Procedure (SOP). |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| 1. Carry out digital printer faulty inspections. | 1.1 Inspect faulty areas/submodules/components.<br>1.2 Interpret digital printer operation manual.<br>1.3 Verify error messages at printer control panel/ workstation/ printer server.<br>1.4 Determine printing process status. | 1.1 Sight, sound and sensor of faulty areas/submodules/components checked based on the breakdown report in accordance with company SOP.<br>1.2 Printer operation manual details identified based on type of printers.<br>1.3 Error messages confirmed at workstation/server in accordance with printer operating manual.<br>1.4 Printing process paused/stopped if any abnormalities in accordance with printer operating manual. |
| 2. Carry out digital printer diagnostic process. | 2.1 Identify related sub module components and materials within the faulty area.<br>2.2 Check faulty area/submodule components and symptoms.<br>2.3 Isolate faulty components and materials.<br>2.4 Execute diagnostic test. | 2.1 Faulty area/submodules components and symptoms confirmed in accordance with service procedure.<br>2.2 Related components and material identified within the faulty area based on error messages and observation results.<br>2.3 Faulty components and materials isolated and confirmed in accordance with printer service manual. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| | | 2.4 Possible causes due to the components or material irregularities and abnormalities diagnosed and documented in accordance with printer service manual. |
| 3. Carry out digital printer troubleshooting process. | 3.1 Determine troubleshooting methodology.<br>3.2 Check severity of fault.<br>3.3 Execute corrective action.<br>3.4 Test run digital printer.<br>3.5 Verify printing results.<br>3.6 Prepare troubleshooting report. | 3.1 Severity of fault inclusive breakdown time confirmed in accordance with troubleshooting procedure.<br>3.2 Corrective action plan identified and executed in accordance with troubleshooting procedure based on printer manual.<br>3.3 Printer functionality and operability fixed and tested in accordance with printer manual<br>3.4 Printing results quality verified in accordance with printing specification.<br>3.5 Troubleshooting report including cause and correction status finalised and produced in accordance with company SOP and reporting format.<br>3.6 Troubleshooting process results on major issues escalated to related departments or external parties (vendor/supplier) for further action in accordance with company SOP. |
| 4. Coordinate digital printing machine maintenance. | 4.1 Interpret machine maintenance /service schedule documents.<br>4.2 Check production schedule.<br>4.3 Plan production maintenance schedule.<br>4.4 Arrange maintenance with authorised party.<br>4.5 Prepare production maintenance report. | 4.1 Planned maintenance (scheduled, predictive, preventive) /service schedule information determined based on type of machines and manufacturer/supplier service contract.<br>4.2 Type of printer, type of finishing machine, machine quantity, shutdown schedule identified and confirmed for servicing in accordance with company SOP.<br>4.3 Maintenance date, time and maintenance duration scheduled in accordance with production schedule/planning.<br>4.4 Production maintenance plan/machine breakdown status liaised with authorised party including in-house maintenance department/personnel or machine supplier in accordance with company SOP. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| | | 4.5 Production maintenance report format determined, maintenance status updated, supporting documents (service report) attached and final reports generated in accordance with company SOP and reporting format. |

| | |
|---|---|
| CU TITLE & CU CODE | Perform digital printing technical supervision.<br>C181-001-3:2023-C05 |
| CU DESCRIPTOR | Perform digital printing technical supervision describes day-to-day activities related to production scheduling, technical training to subordinates/operation personnel, recordkeeping and reporting within an organisation.<br><br>The person who is competent in this CU should be able to prepare operation work schedule, maintain production stock inventory, prepare production reports and conduct on-job technical training.<br><br>The outcome of this CU is to ensure production runs smoothly and to achieve company and production targets in accordance with planned schedule, customer requirements and company Standard Operating Procedure (SOP). |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| 1 Prepare operation work schedule. | 1.1 Interpret job docket.<br>1.2 Determine work schedule format.<br>1.3 Determine workflow detail.<br>1.4 Set time frame for workflow.<br>1.5 Determine machine availability.<br>1.6 Assign production manpower.<br>1.7 Produce work schedule. | 1.1 Job docket information such as delivery date, printing quantity identified and finalised for scheduling purposes in accordance with company production planning.<br>1.2 Work schedule format template and suitability determined in accordance with job docket requirement.<br>1.3 Workflow detailed out in accordance with work instructions.<br>1.4 Time frame for workflow set in accordance with job sheet requirement.<br>1.5 Machines availability via job load confirmed based on job requirements.<br>1.6 Production manpower assignment allocated in accordance with job requirements.<br>1.7 Work schedule content accuracy and adequacy confirmed, systematically arranged and generated in accordance with format. |
| 2 Maintain production stock inventory. | 2.1 Interpret inventory management procedure/ system requirements.<br>2.2 Check stock inventory record.<br>2.3 Calculate stock level. | 2.1 Inventory management procedures/ system requirements such as First In, First Out (FIFO) and Last In, First Out (LIFO) determined in accordance with company SOP.<br>2.2 Stock such as operational consumables/raw materials identified in accordance with inventory recording system (offline/online). |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| | 2.4 Identify stock inventory deviation.<br>2.5 Analyse causes for deviation.<br>2.6 Report stock inventory deviation.<br>2.7 Replenish stock.<br>2.8 Update stock inventory record. | 2.3 Consumable inventory record (expiry date, lifespan and raw material specification) checked in accordance with actual stock and material safety data sheet (MSDS).<br>2.4 Stock level confirmed in accordance with inventory management system.<br>2.5 Causes of deviation evaluated in accordance with inventory management system.<br>2.6 Stock inventory deviation documented in accordance with inventory management system.<br>2.7 Consumable/ faulty stock items replenished in accordance with inventory management system.<br>2.8 Consumable inventory data accuracy confirmed and record completed in accordance with SOP and inventory management system. |
| 3 Prepare production reports. | 3.1 Determine types of production reports.<br>3.2 Gather production record/ report/feedback.<br>3.3 Compile supporting documents/ material.<br>3.4 Analyse production record/ data/ feedback.<br>3.5 Summarise production data.<br>3.6 Recommend for continuous improvement if any.<br>3.7 Produce production report. | 3.1 Production report format, content determined based on report objective and type of report.<br>3.2 Production record/report/feedback collected in accordance with company SOP.<br>3.3 Supporting documents/material related to reporting objectives attached together in accordance with reporting format.<br>3.4 Production data assessed in accordance with company SOP.<br>3.5 Production data and status summarised based on reporting format.<br>3.6 Production report compiled and recommendation proposed in accordance with company SOP and reporting system (online/offline).<br>3.7 Production report generated in accordance with reporting format. |
| 4 Conduct on-job technical training. | 4.1 Receive training request /instructions<br>4.2 Interpret training details requirement. | 4.1 Training details requirements including type of training, objective, schedule identified based on training request/instructions.<br>4.2 Training scope (operation, maintenance, procedures, etc.) confirmed based on the training requirements. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| | 4.3 Determine training scope.<br>4.4 Arrange training facilities.<br>4.5 Carry out training programme.<br>4.6 Compile technical training feedback.<br>4.7 Evaluate training programme. | 4.3 Training facilities including rooms, audio-visual aids and furniture organised in accordance with training details.<br>4.4 Training programme approach (theoretically or practically) executed in accordance with training details.<br>4.5 Technical training feedback gathered (electronically /manually), summarised and documented in accordance with company training procedure.<br>4.6 Training programme performance and audience feedback assessed based on training feedback. |

| | |
|---|---|
| CU TITLE & CU CODE | Perform digital printing customer services.<br>C181-001-3:2023-E01 |
| CU DESCRIPTOR | Perform digital printing customer services describes to providing information on products and services via online or offline. The activities are to enhance customer satisfaction in meeting their request and needs.<br><br>The person who is competent in this CU should be able to handle customer enquiries, prepare sales documentation, handle customer feedback and carry out online web-to-print services.<br><br>The outcome of this CU is to ensure customer needs are fulfilled and customer satisfaction maintained in accordance with company policy and SOP. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| 1 Handle customer enquiries. | 1.1 Identify types of enquiries channels.<br>1.2 Compile customer enquiries.<br>1.3 Attend to customer enquiries.<br>1.4 Check types of enquiries.<br>1.5 Register customer enquiries.<br>1.6 Provide relevant services to customer. | 1.1 Types of enquiries channels such as walk-in, telephone, digital platform (such as social media, chat bot/Artificial Intelligence (AI), e-commerce) and email confirmed in accordance with company Services Level Standards (SLS).<br>1.2 Customer enquiries gathered in accordance with customer service policy.<br>1.3 Customer enquiries resolved in accordance with company SOP and guidelines (if any).<br>1.4 Types of enquiries such as product specification, quotation and delivery date confirmed in accordance with customer service policy.<br>1.5 Customer enquiries registered in accordance with company Services Level Standards (SLS).<br>1.6 Relevant services (publication/non publication) to customers delivered as per enquiries in accordance with company SOP. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| 2 Prepare sales documentation. | 2.1 Identify quotation format.<br>2.2 Identify scope of work/services.<br>2.3 Calculate product and service costs.<br>2.4 Check standard market rate.<br>2.5 Produce sales quotation.<br>2.6 Request sales order confirmation.<br>2.7 Prepare job docket/order. | 2.1 Quotation format including template via online / offline identified in accordance with company SOP.<br>2.2 Scope of work/ services identified in accordance with customer requirement.<br>2.3 Material and printing services cost estimated in accordance with company financial system.<br>2.4 Standard market rate confirmed based on market trends.<br>2.5 Sales quotation formatting, information of price and term & conditions confirmed and issued in accordance with company SOP.<br>2.6 Sales order confirmation acquired in accordance with company SOP.<br>2.7 Job docket/order details, supporting information confirmed, organised and generated in accordance with documentation format. |
| 3 Handle customer feedback. | 3.1 Interpret customer service standards.<br>3.2 Obtain customer feedback.<br>3.3 Evaluate customer satisfaction index during enquires/ complaint handling.<br>3.4 Comply response time during customer services.<br>3.5 Update customer feedback evaluation report. | 3.1 Customer service standard content including company/customer confidentiality & privacy determined in accordance with company policy.<br>3.2 Customer feedback gathered in accordance with customer service reporting system.<br>3.3 Customer satisfaction level during enquires/ complaint handling assessed in accordance with company SOP and guidelines.<br>3.4 Response time during customer services assessed in accordance with company SLS.<br>3.5 Customer feedback evaluation report completed in accordance with reporting format. |

| WORK ACTIVITIES | WORK STEPS | PERFORMANCE CRITERIA |
|---|---|---|
| 4 Carry out online web-to-print services. | 4.1 Obtain online web-to-print job orders.<br>4.2 Interpret online web-to-print job order specifications.<br>4.3 Execute online web-to-print order.<br>4.4 Update online web-to-print order status. | 4.1 Online web-to-print job order received in accordance with platform.<br>4.2 Online web-to-print job order specification determined in accordance with customer requirements.<br>4.3 Online web-to-print order processed in accordance with job specifications.<br>4.4 Online order web-to-print status responded in accordance with company SOP. |

**CURRICULUM OF COMPETENCY UNIT**

**NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR:**

**DIGITAL PRINTING PRODUCTION**

**LEVEL 3**

## 15. Curriculum of Competency Unit

### 15.1 Perform digital printer colour profiling.

| | | | |
|---|---|---|---|
| SECTION | (C) Manufacturing | | |
| GROUP | (181) Printing and Service Activities Related to Printing | | |
| AREA | Digital Printing | | |
| NOSS TITLE | Digital Printing Production | | |
| COMPETENCY UNIT TITLE | Perform digital printer colour profiling. | | |
| LEARNING OUTCOMES | The learning outcomes of this competency are to enable the trainees to ensure colour quality inclusive consistency throughout different substrates in accordance with printer manual and standard colour target value requirements.<br><br>Upon completion of this competency unit, trainees should be able to:<br>1. Check printer colour profiling requirements.<br>2. Carry out printer profiling preparation.<br>3. Carry out printer colour profiling. | | |
| TRAINING PREREQUISITE (SPECIFIC) | Not Available. | | |
| CU CODE | C181-001-3:2023-C01 | NOSS LEVEL | Three (3) |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 1. Check printer colour profiling requirements. | 1.1 Colour profiling requirements:<br>● Colour standards.<br>● Printer colour profiling procedure.<br>1.2 Printer colour matching procedure.<br>1.3 Colour matching tools, equipment and materials:<br>● Densitometer<br>● Light table<br>1.4 Printer colour profiling tools, equipment and materials:<br>● Scanner.<br>● Profiling tools.<br>● Light table.<br>● Digital substrate. | 1.1 Determine colour standards requirements.<br>1.2 Identify colour profiling requirements.<br>1.3 Interpret printer colour profiling and colour matching procedure.<br>1.4 Determine printer baseline status.<br>1.5 Determine printer colour profiling tools/equipment.<br>1.6 Identify substrates characteristics.<br>1.7 Check colour-matching intent. | ATTITUDE<br>1.1 Resourceful in profiling and colour matching process.<br>1.2 Meticulous in checking colour-matching intent.<br>1.3 Integrity practices in performing job at all times.<br><br>SAFETY<br>1.1 Comply with occupational safety standards related to printing industry.<br><br>ENVIRONMENT<br>1.1 Adhere to ESG policy in working environment at all times.<br>1.2 Comply with environmental regulations related to printing industry. | COGNITIVE DOMAIN<br>1.1 Colour profiling requirement explained.<br>1.2 Printer colour matching procedure described.<br>1.3 Colour matching tools, equipment and materials listed and explained.<br>1.4 Printer colour profiling tools, equipment and materials listed and explained.<br>1.5 Printer baseline to manufacturer standards explained.<br>1.6 Characteristics of substrate for colour profiling explained.<br>1.7 Colour matching intent checking procedure described.<br>1.8 Importance of sustainability in printing industry elaborated.<br>1.9 Importance of Safety and Health procedures in workplace described.<br><br>PSYCHOMOTOR DOMAIN<br>1.1 Colour standards such as Fogra, Ugra and ISO 12647 confirmed based on job requirements. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | 1.5 Printer baseline to manufacturer standards.<br>1.6 Characteristic of substrate for colour profiling:<br>● Optical density.<br>● Gloss level.<br>1.7 Colour matching intent checking procedure:<br>● Offset matching.<br>● Press to press matching.<br>● Customer proof matching.<br>● Intended product application.<br>1.8 Importance of sustainability | | | 1.2 Colour profiling requirements including matching intent, colour format determined in accordance with colour standards.<br>1.3 Colour-matching procedure determined based on colour profiling requirements.<br>1.4 Printer baseline status confirmed in accordance with printer standard.<br>1.5 Printer colour profiling tools/equipment confirmed in accordance with type of profiling software.<br>1.6 Characteristics of substrates such as optical density and gloss level for colour profiling confirmed in accordance with job docket.<br>1.7 Digital printing colour matching intent such as offset matching, press-to-press matching, customer proof matching, intended product application confirmed in accordance with job docket. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | in printing industry.<br>● Environment, Social and Governance (ESG) policy in printing.<br>● Benefits of ESG.<br>● Refuse, Reduce, Reuse, Repurpose, Recycle (5R) concept.<br>1.9 Importance of Safety and Health procedures in workplace:<br>● People.<br>● Machinery.<br>● Materials. | | | AFFECTIVE DOMAIN<br>1.1 Resourcefulness in profiling and colour matching process demonstrated.<br>1.2 Colour matching intent checked meticulously.<br>1.3 Integrity in performing job practised at all times.<br>1.4 Occupational safety standards related to printing industry complied.<br>1.5 ESG policy adhered to in working environment at all times.<br>1.6 Environmental regulations related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 2. Carry out printer profiling preparation. | 2.1 Safety procedures on printer setup.<br>2.2 Digital printer consumable items:<br>● Drum.<br>● Toner.<br>● Ink.<br>2.3 Digital printer substrate setting procedure.<br>2.4 Printer profiling program setting procedure.<br>2.5 Printer profiling test chart.<br>2.6 Printer profiling tools and functions:<br>● Test chart.<br>● Colour checker.<br>● Spectrophoto meter.<br>2.7 Printer profiling procedure. | 2.1 Check consumables items conditions.<br>2.2 Execute substrates setup.<br>2.3 Execute printer profiling program setup.<br>2.4 Execute profiling test chart.<br>2.5 Verify profiling tools/device functionality. | ATTITUDE<br>2.1 Meticulous in carrying out printer colour profiling preparation.<br>2.2 Resourceful in utilising colour measurement tools.<br><br>SAFETY<br>2.1 Comply with occupational safety standards related to printing industry.<br><br>ENVIRONMENT<br>2.1 Adhere to ESG policy in working environment at all times.<br>2.2 Comply with environmental regulations related to printing industry. | COGNITIVE DOMAIN<br>2.1 Safety procedures on printer setup described.<br>2.2 Digital printer consumables items listed.<br>2.3 Digital printer substrate setting procedure described.<br>2.4 Printer profiling program setting procedure described.<br>2.5 Printer profiling test chart explained.<br>2.6 Printer profiling tools listed and functions explained<br>2.7 Printer profiling procedure described.<br><br>PSYCHOMOTOR DOMAIN<br>2.1 Drum/ toner/ ink and other related consumables items quantity status displayed on machine panel and manufacturing expiry date confirmed in accordance with printer specification.<br>2.2 Substrate setting confirmed and positioned/placed in accordance with job docket and printer manual. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | | | | 2.3 Printer profiling program setting completed in accordance with profiling procedure.<br>2.4 Profiling test chart printed out in accordance with printer specification.<br>2.5 Profiling tools/device functionality confirmed in accordance with profiling procedure.<br><br><u>AFFECTIVE DOMAIN</u><br>2.1 Printer colour profiling prepared meticulously.<br>2.2 Resourcefulness in utilising colour measurement tools demonstrated.<br>2.3 Occupational safety standards related to printing industry complied.<br>2.4 ESG policy adhered to in working environment at all times.<br>2.5 Environmental regulations related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 3. Carry out printer colour profiling. | 3.1 Colour profiling targets:<br>● Fogra.<br>● Ugra.<br>● ISO 12647.<br>3.2 Test chart printing procedure.<br>3.3 Types of profiling devices and scanning procedure:<br>● Scanner.<br>● Profiling tools.<br>3.4 Profiling software:<br>● Data collection.<br>● File generations.<br>● Image colour management (ICM) file generation.<br>3.5 Colour profile creation procedure. | 3.1 Determine colour profiling target.<br>3.2 Determine colour measurement tools.<br>3.3 Execute scanning with profiling devices.<br>3.4 Execute data input.<br>3.5 Update profiling values into digital printer server.<br>3.6 Reprint revised profiling test chart.<br>3.7 Verify revised profiling test chart. | ATTITUDE<br>3.1 Meticulous in setting up digital printer profiling.<br>3.2 Handle digital printer with care.<br>3.3 Handle colour measurement tools with care.<br><br>SAFETY<br>3.1 Comply with occupational safety standards related to printing industry.<br><br>ENVIRONMENT<br>3.1 Adhere to ESG policy in working environment at all times.<br>3.2 Comply with environmental regulations related to printing industry. | COGNITIVE DOMAIN<br>3.1 Colour profiling targets explained.<br>3.2 Test chart printing procedure described.<br>3.3 Types of profiling devices and scanning procedure described.<br>3.4 Profiling software explained.<br>3.5 Colour profile creation procedure described.<br><br>PSYCHOMOTOR DOMAIN<br>3.1 Colour profiling targets including Fogra, Ugra, ISO 12647 identified in accordance with job requirements and job docket.<br>3.2 Type of colour measurement tools selected and used correctly in accordance with test chart printing procedure.<br>3.3 Scanning with profiling devices executed in accordance with printer manual.<br>3.4 Data input collected and profiles created based on different types of substrates.<br>3.5 Profiling values information updated into digital printer |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | | | | server in accordance with printer manual.<br>3.6 Revised profiling test chart printed results confirmed in accordance with test chart printing procedure.<br>3.7 Revised profiling test chart values confirmed against the colour target values in accordance with test chart printing procedure.<br><br><u>AFFECTIVE DOMAIN</u><br>3.1 Meticulous in setting up digital printer profiling setup meticulously.<br>3.2 Digital printer handled with care.<br>3.3 Colour measurement tools handled with care.<br>3.4 Occupational safety standards related to printing industry complied.<br>3.5 ESG policy adhered to in working environment at all times.<br>3.6 Environmental regulations related to printing industry complied. |

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

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## 15.2 Perform digital printing production control.

| | | | |
|---|---|---|---|
| SECTION | (C) Manufacturing | | |
| GROUP | (181) Printing and Service Activities Related to Printing | | |
| AREA | Digital Printing | | |
| NOSS TITLE | Digital Printing Production | | |
| COMPETENCY UNIT TITLE | Perform digital printing production control. | | |
| LEARNING OUTCOMES | The learning outcomes of this competency are to enable the trainees to ensure production efficiency by controlling the production workflow and employee performance in order to meet operation schedules and productivity in accordance with planned schedule, customer requirements and company Standard Operating Procedure (SOP).<br><br>Upon completion of this competency unit, trainees should be able to:<br>1. Check production control requirements.<br>2. Monitor digital printing production.<br>3. Control digital printing production wastage.<br>4. Carry out finishing process verification. | | |
| TRAINING PREREQUISITE (SPECIFIC) | Not Available. | | |
| CU CODE | C181-001-3:2023-C02 | NOSS LEVEL | Three (3) |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 1. Check production control requirements. | 1.1 Planned schedule information.<br>1.2 Job docket information: | 1.1 Obtain planned schedule.<br>1.2 Interpret job docket.<br>1.3 Determine printing productivity. | ATTITUDE<br>1.1 Resourceful in interpreting production workflow. | COGNITIVE DOMAIN<br>1.1 Planned schedule information explained.<br>1.2 Job docket information described. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | ● Customer information.<br>● Job number.<br>● Order quantity.<br>● Delivery and instruction date.<br>● Substrate specification.<br>● Quantity print.<br>1.3 Productivity resources:<br>● Manpower.<br>● Materials.<br>● Machines.<br>1.4 Production process workflow in process (WIP):<br>● Standard Operating Procedure (SOP).<br>● Work instruction. | 1.4 Identify resource availability.<br>1.5 Determine production process workflow/work in progress (WIP). | 1.2 Thorough in checking production control elements.<br>1.3 Integrity practices in performing job at all times.<br><br><u>SAFETY</u><br>1.1 Comply with occupational safety standards related to printing industry.<br><br><u>ENVIRONMENT</u><br>1.1 Adhere to ESG policy in working environment at all times.<br>1.2 Comply with environmental regulations related to printing industry. | 1.3 Productivity resources explained.<br>1.4 Production process workflow in process (WIP) explained.<br>1.5 Importance of sustainability in printing industry elaborated.<br>1.6 Importance of Safety and Health procedures in workplace described.<br><br><u>PSYCHOMOTOR DOMAIN</u><br>1.1 Planned schedule format identified and retrieved in accordance with company SOP sample.<br>1.2 Job specifications including special request, type of format and type of substrates, type of finishing) identified in accordance with job docket.<br>1.3 Printing productivity confirmed based on availability of resources (manpower, materials, machines).<br>1.4 Availability of resources including manpower, materials, machines confirmed in accordance with job docket. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | 1.5 Importance of sustainability in printing industry.<br>● Environment, Social and Governance (ESG) policy in printing.<br>● Benefits of ESG.<br>● Refuse, Reduce, Reuse, Repurpose, Recycle (5R) concept.<br>1.6 Importance of Safety and Health procedures in workplace:<br>● People.<br>● Machinery.<br>● Materials. | | | 1.5 Workflow/work in progress (WIP) process determined in accordance with company SOP sample.<br>1.6 Importance of sustainability in printing industry elaborated.<br>1.7 Importance of Safety and Health procedures in workplace described.<br><br><u>AFFECTIVE DOMAIN</u><br>1.1 Resourcefulness in interpreting production workflow demonstrated.<br>1.2 Production control elements checked thoroughly.<br>1.3 Integrity in performing job practised at all times.<br>1.4 Occupational safety standards related to printing industry complied.<br>1.5 ESG policy adhered to in working environment at all times.<br>1.6 Environmental regulations related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 2. Monitor digital printing production. | 2.1 Production schedule information:<br>● Date.<br>● Running shift.<br>● Type of printers.<br>2.2 Briefing issue/ topic:<br>● Safety briefing.<br>● Performance target.<br>● Previous production performance/ result.<br>● Problem analysis.<br>● Revised schedule.<br>● New instruction/ planning.<br>● Feedback for improvement.<br>2.3 Production activities | 2.1 Interpret production schedule.<br>2.2 Interpret printing regulatory/ authority requirements.<br>2.3 Observe printing productivity.<br>2.4 Handle digital printer malfunction.<br>2.5 Notify production productivity status.<br>2.6 Request productivity feedback.<br>2.7 Produce production monitoring report. | <u>ATTITUDE</u><br>2.1 Responsive to arising production concern issue.<br>2.2 Attentive in handling quality issue and printer malfunction.<br><br><u>SAFETY</u><br>2.1 Comply with occupational safety standards related to printing industry.<br><br><u>ENVIRONMENT</u><br>2.1 Adhere to ESG policy in working environment at all times.<br><br>2.2 Comply with environmental regulations related to printing industry. | <u>COGNITIVE DOMAIN</u><br>2.1 Production schedule information explained.<br>2.2 Briefing issue/ topic explained.<br>2.3 Method in monitoring production activities explained.<br>2.4 Technical problem handling described.<br>2.5 Organisation chart explained.<br>2.6 Production Standard Operating Procedure (SOP) described.<br>2.7 Production monitoring report format explained.<br><br><u>PSYCHOMOTOR DOMAIN</u><br>2.1 Production schedule information such as date, running shift, type of printers identified in accordance with production requirements.<br>2.2 Safety, Health and Environmental (SHE) guidelines and legislation Act identified and adhered to in accordance with OSHA requirements.<br>2.3 Printing productivity results compared with targeted planning and production |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | monitoring methods:<br>● Checklist.<br>● Report.<br>● Observation.<br>2.4 Technical problems handling:<br>● Quality issue.<br>● Printer malfunction.<br>● Escalation procedure.<br>2.5 Organisation chart:<br>● Authorised personnel.<br>● Hierarchy.<br>● Responsibility.<br>● Time essence.<br>2.6 Production Standard Operating Procedure (SOP).<br>2.7 Production monitoring report data: | | | schedule in accordance with company SOP sample.<br>2.4 Digital printer malfunction rectified/fixed/or forwarded for further action (if major issues) in accordance with production SOP sample and printer manual.<br>2.5 Production productivity status including improvement plan informed to subordinate in according to production SOP sample.<br>2.6 Printing productivity feedback inclusive improvement ideas gathered in accordance with production SOP sample.<br>2.7 Production report format determined, final data updated, supporting documents attached and reports generated in accordance with reporting format.<br><br><u>AFFECTIVE DOMAIN</u><br>2.1 Production concern issue raised responsively. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | ● Productivity and Quality status.<br>● Rectification.<br>● Conformance /non-conformance. | | | 2.2 Attentive manner in handling quality issues and printer malfunctions demonstrated.<br>2.3 Occupational safety standards related to printing industry complied.<br>2.4 ESG policy adhered to in working environment at all times.<br>2.5 Environmental regulations related to printing industry complied. |
| 3. Control digital printing production wastage. | 3.1 Production report format.<br>3.2 Cause of abnormal wastages.<br>3.3 Allowable wastage allocation.<br>3.4 Waste disposal handling procedure:<br>● Segregate.<br>● Labelling.<br>● Palletizes.<br>● Scheduled waste. | 3.1 Compile production report.<br>3.2 Estimate production wastage.<br>3.3 Analyse production wastage.<br>3.4 Identify causes of abnormal wastages.<br>3.5 Recommend remedial/ correction action. | ATTITUDE:<br>3.1 Thorough in monitoring printing production wastage.<br>3.2 Resourceful in identifying causes of wastage.<br>3.3 Proactive in recommending remedial action.<br><br>SAFETY<br>3.1 Comply with occupational safety standards related to printing industry. | COGNITIVE DOMAIN<br>3.1 Production report format explained.<br>3.2 Cause of abnormal wastage explained.<br>3.3 Allowable wastage allocation explained.<br>3.4 Waste disposal handling procedure described.<br>3.5 Wastage recording procedure described.<br>3.6 Wastage remedial/corrective action strategy explained.<br>3.7 Presentation technique explained.<br><br>PSYCHOMOTOR DOMAIN |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | 3.5 Wastage recording procedure.<br>3.6 Wastage remedial/ corrective action strategy.<br>3.7 Presentation technique. | | ENVIRONMENT<br>3.1 Adhere to ESG policy in working environment at all times.<br>3.2 Comply with environmental regulations related to printing industry. | 3.1 Production report format and daily production rates identified and retrieved in accordance with production SOP sample.<br>3.2 Production wastage calculated in accordance with calculation method/formula.<br>3.3 Production wastage data documented and productivity efficiency evaluated based on wastage record.<br>3.4 Causes of abnormal wastage such as printer malfunction, substrates defect (folded, misaligned, torn, etc) identified in accordance with production SOP sample.<br>3.5 Remedial/corrective action strategy and plan proposed to relevant party in accordance with production SOP sample.<br><br>AFFECTIVE DOMAIN<br>3.1 Printing production wastages monitored thoroughly.<br>3.2 Resourcefulness in identifying causes of wastage demonstrated. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | | | | 3.3 Proactive manner in recommending remedial action demonstrated.<br>3.4 Occupational safety standards related to printing industry complied.<br>3.5 ESG policy adhered to in working environment at all times.<br>3.6 Environmental regulations related to printing industry complied. |
| 4. Carry out finishing process verification. | 4.1 Digital printing finishing process:<br>● Folding.<br>● Binding.<br>● Trimming.<br>● Punching.<br>● Die-cut/Digital cutting.<br>4.2 Digital printing substrates specification:<br>● Type.<br>● Sizes Thickness. | 4.1 Determine finishing process specification.<br>4.2 Check printing substrates.<br>4.3 Check finishing methodology<br>4.4 Check types of finishing category.<br>4.5 Check types of finishing machines.<br>4.6 Verify final finished goods. | ALTITUDE<br>4.1 Thorough in verifying finishing process.<br>4.2 Proactive in determining finishing process specification.<br><br>SAFETY<br>4.1 Comply with occupational safety standards related to printing industry.<br><br>ENVIRONMENT<br>4.1 Adhere to ESG policy in working | COGNITIVE DOMAIN<br>4.1 Digital printing finishing process explained.<br>4.2 Digital printing substrates specification explained.<br>4.3 Types of finishing machine listed.<br>4.4 Types of finished good listed.<br>4.5 Finished product verification procedure described.<br><br>PSYCHOMOTOR DOMAIN<br>4.1 Finishing process specification inclusive type of finishing confirmed in accordance with job specifications. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | 4.3 Types of finishing machine:<br>● Folder.<br>● Binder.<br>● Trimmer.<br>● Puncher.<br>● Cutter.<br>4.4 Types of finished good:<br>● Packaging.<br>● Publication product.<br>● Large format.<br>● Labelling.<br>4.5 Finished product verification procedure. | | environment at all times.<br>4.2 Comply with environmental regulations related to printing industry. | 4.2 Printing substrates specification including types, sizes, thickness confirmed in accordance with job specifications.<br>4.3 Types of finishing machines, methodology and functions suitability confirmed in accordance with job specifications.<br>4.4 Types of finishing category including folding, binding, trimming, punching and die cut/laser-cutting confirmed in accordance with job specifications.<br>4.5 Types of finishing machine for folding, binding, trimming, punching and die cut/laser-cutting confirmed in accordance with job specifications.<br>4.6 Final finished goods acceptance confirmed in accordance with job specifications.<br><br><u>AFFECTIVE DOMAIN</u> |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | | | | 4.1 Finishing process verified thoroughly.<br>4.2 Finishing process specification determined proactively.<br>4.3 Occupational safety standards related to printing industry complied.<br>4.4 ESG policy adhered to in working environment at all times.<br>4.5 Environmental regulations related to printing industry complied. |

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

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### 15.3 Perform digital printing quality assurance.

| | | | |
|---|---|---|---|
| SECTION | (C) Manufacturing | | |
| GROUP | (181) Printing and Service Activities Related to Printing | | |
| AREA | Digital Printing | | |
| NOSS TITLE | Digital Printing Production | | |
| COMPETENCY UNIT TITLE | Perform digital printing quality assurance. | | |
| LEARNING OUTCOMES | The learning outcomes of this competency are to enable the trainees to ensure that products and services meet quality standards in accordance with customer requirements, and company Standard Operating Procedure (SOP).<br><br>Upon completion of this competency unit, trainees should be able to:<br>1. Carry out incoming raw material inspection.<br>2. Carry out digital printer setup verification.<br>3. Carry out product sample verification.<br>4. Carry out final product quality inspections. | | |
| TRAINING PREREQUISITE (SPECIFIC) | Not Available. | | |
| CU CODE | C181-001-3:2023-C03 | NOSS LEVEL | Three (3) |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 1. Carry out incoming raw material inspection. | 1.1 Raw material specification:<br>● Type of materials.<br>● Quality.<br>● Life span.<br>● Expiry date. | 1.1 Identify types of raw materials.<br>1.2 Interpret raw materials inspection procedure.<br>1.3 Check raw materials specification. | ATTITUDE<br>1.1 Meticulous in checking incoming materials.<br>1.2 Honest in updating raw materials quality checklist. | COGNITIVE DOMAIN<br>1.1 Raw material specification explained.<br>1.2 Raw materials inspection procedure described.<br>1.3 Type and function of product substrate listed and explained. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | 1.2 Raw materials inspection procedure:<br>● Material accuracy.<br>● Quality compliance.<br>● Method of inspection.<br>1.3 Type and function of product substrate:<br>● Types of paper.<br>● Paper specification.<br>● Plastic.<br>● Tarpaulin.<br>● Synthetic paper.<br>1.4 Raw Material inspection criteria:<br>● Substrate abnormalities.<br>● Substrate compliance with | 1.4 Check raw materials quality and quantity.<br>1.5 Check raw materials storage requirements.<br>1.6 Ensure storage environment compliance.<br>1.7 Update raw materials quality and quantity checklist. | 1.3 Integrity practices in performing job at all times.<br><br><u>SAFETY</u><br>1.1 Comply with occupational safety standards related to printing industry.<br><br><u>ENVIRONMENT</u><br>1.1 Adhere to ESG policy in working environment at all times.<br>1.2 Comply with environmental regulations related to printing industry. | 1.4 Raw Material inspection criteria explained.<br>1.5 Storage area requirement for materials described.<br>1.6 Quality checklist format listed.<br>1.7 Importance of sustainability in printing industry elaborated.<br>1.8 Importance of Safety and Health procedures in workplace described.<br><br><u>PSYCHOMOTOR DOMAIN</u><br>1.1 Type of raw materials including substrates, toners and ink cartridges identified in accordance with procurement procedure.<br>1.2 Raw materials inspection procedure demonstrated in accordance with SHE guidelines.<br>1.3 Material specification (expiry date, lifespan and raw material type) confirmed in accordance with material safety data sheet (MSDS) and purchase order.<br>1.4 Material quality and quantity confirmed in accordance with |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | manufacturers requirements.<br>● Material Safety Data Sheet (MSDS) information.<br>1.5 Storage area requirement for materials:<br>● Humidity.<br>● Safe location.<br>● Racking system.<br>● Labelling system.<br>● Housekeeping procedure.<br>1.6 Quality checklist format.<br>1.7 Importance of sustainability in printing industry.<br>● Environment, Social and Governance (ESG) policy in printing.<br>● Benefits of ESG. | | | material specification and inventory record.<br>1.5 Material storage requirements inclusive size, safety and suitability for substrate specifications identified in accordance with production SOP sample.<br>1.6 Storage environment assured in accordance with storage procedure and SHE guidelines.<br>1.7 Raw materials quality and quantity checklist format confirmed and utilised in accordance with recording format.<br><br><u>AFFECTIVE DOMAIN</u><br>1.1 Incoming materials checked meticulously.<br>1.2 Raw materials quality and quantity checklist updated honestly.<br>1.3 Integrity in performing job practised at all times.<br>1.4 Occupational safety standards related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | ● Refuse, Reduce, Reuse, Repurpose, Recycle (5R) concept.<br>1.8 Importance of Safety and Health procedures in workplace:<br>● People.<br>● Machinery.<br>● Materials. | | | 1.5 ESG policy adhered to in working environment at all times.<br>1.6 Environmental regulations related to printing industry complied. |
| 2. Carry out digital printer setup verification. | 2.1 Basic pre-flight element:<br>● Bleed.<br>● Registration marks.<br>● Rich black.<br>● Font.<br>● Image (link file, resolution).<br>● Colour bar.<br>● File size.<br>● Page information. | 2.1 Check digital printer setting requirements.<br>2.2 Verify final artwork setting.<br>2.3 Verify pre-flighting.<br>2.4 Verify digital server setting parameter.<br>2.5 Verify printer setup parameters.<br>2.6 Verify test print result. | ATTITUDE<br>2.1 Meticulous and thorough in verifying printer setup parameter.<br>2.2 Handle digital printer with care.<br><br>SAFETY<br>2.1 Comply with occupational safety standards related to printing industry. | COGNITIVE DOMAIN<br>2.1 Basic pre-flight element explained.<br>2.2 Advance pre-flight editing described.<br>2.3 Server setting parameters explained.<br>2.4 Printer setup verification procedure described.<br>2.5 Test print result evaluation procedure described.<br><br>PSYCHOMOTOR DOMAIN<br>2.1 Digital printer setting parameters confirmed in |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | 2.2 Advanced pre-flight editing:<br>● Colour.<br>● Font.<br>● Image.<br>● Colour profile.<br>● Page size.<br>● Element positioning.<br>2.3 Server setting parameter.<br>2.4 Printer setup verification procedure.<br>2.5 Test print result evaluation procedure. | | ENVIRONMENT<br>2.1 Adhere to ESG policy in working environment at all times.<br>2.2 Comply with environmental regulations related to printing industry. | accordance with job requirements.<br>2.2 Final artwork setting status confirmed in accordance with job docket.<br>2.3 Pre-flighting (printability, design errors) confirmed in accordance with job requirements.<br>2.4 Server setting parameter confirmed in accordance with printer manual.<br>2.5 Printer setup parameter confirmed in accordance with printer manual.<br>2.6 Test print results evaluated in accordance with job specifications.<br><br>AFFECTIVE DOMAIN<br>2.1 Printer setup parameter verified meticulously and thoroughly.<br>2.2 Digital printer handled with care.<br>2.3 Occupational safety standards related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | | | | 2.4 ESG policy adhered to in working environment at all times.<br>2.5 Environmental regulations related to printing industry complied. |
| 3. Carry out product sample verification. | 3.1 Sample/mock-up quality inspection standard procedures.<br>3.2 Method of sample/mock-up verification:<br>● Visual.<br>● Measurement against job docket.<br>● Verification tools.<br>3.3 Sample/mock-up quality inspection printing criteria:<br>● Text.<br>● Positioning.<br>● Colour density. | 3.1 Interpret sample/mock-up quality inspection standard.<br>3.2 Verify sample/mock-up printing quality.<br>3.3 Verify sample/mock-up finishing quality.<br>3.4 Update sample/mock-up quality inspection checklist. | <u>ATTITUDE</u><br>3.1 Attentive to details in checking printing and finishing quality.<br><br><u>SAFETY</u><br>3.1 Comply with occupational safety standards related to printing industry.<br><br><u>ENVIRONMENT</u><br>3.1 Adhere to ESG policy in working environment at all times.<br>3.2 Comply with environmental regulations related to printing industry. | <u>COGNITIVE DOMAIN</u><br>3.1 Sample/mock-up quality inspection standard procedure described.<br>3.2 Method of sample/mock-up verification explained.<br>3.3 Sample/mock-up quality inspection printing criteria listed.<br>3.4 Sample/mock-up quality inspection finishing criteria listed.<br>3.5 Sample/mock-up quality inspection checklist format.<br><br><u>PSYCHOMOTOR DOMAIN</u><br>3.1 Sample mock-up quality inspection standard determined in accordance with type of product.<br>3.2 Sample/mock-up printing quality inspected and confirmed in accordance with |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | ● Image registration<br>● Image quality.<br>● Image alignment.<br>3.4 Sample/mock-up quality inspection finishing criteria:<br>● Stitching.<br>● Gloss.<br>● Binding.<br>● Collate.<br>● Trimming.<br>● Size accuracy.<br>3.5 Sample/ mock-up quality inspection checklist format. | | | job docket and job requirements.<br>3.3 Sample/mock-up finishing quality inspected and confirmed in accordance with job docket and job requirements.<br>3.4 Sample/mock-up quality inspection checklist completed in accordance with recording format.<br><br><u>AFFECTIVE DOMAIN</u><br>3.1 Attentive to details in checking printing and finishing quality demonstrated.<br>3.2 Occupational safety standards related to printing industry complied.<br>3.3 ESG policy adhered to in working environment at all times.<br>3.4 Environmental regulations related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 4. Carry out final product quality inspections. | 4.1 Product quality inspection procedure:<br>● Quality standard.<br>● Method of inspection.<br>4.2 Product quality inspection criteria:<br>● Printing.<br>● Finishing.<br>4.3 Types and functions of quality inspection tools and material:<br>● Densitometer.<br>● Magnifying glass.<br>● Ruler.<br>● Colour chart.<br>● Light box.<br>4.4 Product quality inspection recording procedure. | 4.1 Interpret product quality inspections requirements.<br>4.2 Determine quality inspection tools and materials.<br>4.3 Inspect final product quality.<br>4.4 Record product quality inspections results. | <u>ATTITUDE</u><br>4.1 Attentive to details in performing product quality inspection.<br><br><u>SAFETY</u><br>4.1 Comply with occupational safety standards related to printing industry.<br><br><u>ENVIRONMENT</u><br>4.1 Adhere to ESG policy in working environment at all times.<br>4.2 Comply with environmental regulations related to printing industry. | <u>COGNITIVE DOMAIN</u><br>4.1 Product quality inspection procedure described.<br>4.2 Product quality inspection criteria explained.<br>4.3 Types and functions of quality inspection tools and materials listed and explained.<br>4.4 Product quality inspection checklist explained.<br><br><u>PSYCHOMOTOR DOMAIN</u><br>4.1 Product quality inspections procedures and standards determined in accordance with company quality assurance procedure.<br>4.2 Quality inspections tools, materials and checking method applied in accordance with product specification.<br>4.3 Final product quality including final finishing output confirmed in accordance with job docket and job requirements.<br>4.4 Product quality inspections information results, quality issues and recommended |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | | | | countermeasure/corrective actions documented and completed in accordance with format.<br><br><u>AFFECTIVE DOMAIN</u><br>4.1 Attentive to details in performing product quality inspections demonstrated.<br>4.2 Occupational safety standards related to printing industry complied.<br>4.3 ESG policy adhered to in working environment at all times.<br>4.4 Environmental regulations related to printing industry complied. |

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

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### 15.4 Perform digital printing maintenance support.

| | | | |
|---|---|---|---|
| SECTION | (C) Manufacturing | | |
| GROUP | (181) Printing and Service Activities Related to Printing | | |
| AREA | Digital Printing | | |
| NOSS TITLE | Digital Printing Production | | |
| COMPETENCY UNIT TITLE | Perform digital printing maintenance support. | | |
| LEARNING OUTCOMES | The learning outcomes of this competency are to enable the trainees to minimise interruption to production and allow for greater efficiencies with digital printing equipment in accordance with printer manual, and company Standard Operating Procedure (SOP).<br><br>Upon completion of this competency unit, trainees should be able to:<br>1. Carry out digital printer faulty inspections.<br>2. Carry out digital printer diagnostic process.<br>3. Carry out digital printer troubleshooting process.<br>4. Coordinate digital printing machine maintenance. | | |
| TRAINING PREREQUISITE (SPECIFIC) | Not Available. | | |
| CU CODE | C181-001-3:2023-C04 | NOSS LEVEL | Three (3) |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 1. Carry out digital printer faulty inspections. | 1.1 Breakdown report.<br>1.2 Printer operation manual.<br>1.3 Printer functionality of | 1.1 Inspect faulty areas/submodules/ components.<br>1.2 Interpret digital printer operation manual. | ATTITUDE<br>1.1 Meticulous in identifying faulty areas/components.<br>1.2 Thorough in observing printer abnormalities. | COGNITIVE DOMAIN<br>1.1 Breakdown report explained.<br>1.2 Printer operation manual explained. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | each module's components:<br>● Input module.<br>● Press/ imaging module.<br>● Finishing module.<br>1.4 Inspection procedure:<br>● Printer emergency stop procedure.<br>● Safety procedure.<br>1.5 Method of inspection and abnormalities descriptions:<br>● Sight.<br>● Sound.<br>● Smell.<br>● Signal.<br>● Faulty areas/ submodules/ components. | 1.3 Verify error messages at printer control panel/ workstation/ printer server.<br>1.4 Determine printing process status. | 1.3 Integrity practices in performing job at all times.<br><br><u>SAFETY</u><br>1.1 Comply with occupational safety standards related to printing industry.<br><br><u>ENVIRONMENT</u><br>1.1 Adhere to ESG policy in working environment at all times.<br>1.2 Comply with environmental regulations related to printing industry. | 1.3 Printer functionality of each module's components listed and explained.<br>1.4 Inspection procedure described.<br>1.5 Method of inspection and abnormalities descriptions explained.<br>1.6 Definition of error messages at printer control panel/ workstation/ server explained.<br>1.7 Importance of Personal Protective Equipment (PPE) for printing industry explained.<br>1.8 Importance of sustainability in printing industry elaborated.<br>1.9 Importance of Safety and Health procedures in workplace described.<br><br><u>PSYCHOMOTOR DOMAIN</u><br>1.1 Sight, sound and sensor of faulty area/submodules/ components checked based on the breakdown report in |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | 1.6 Definition of error messages at printer control panel/ workstation/ server.<br>1.7 Importance of Personal Protective Equipment (PPE) for printing industry:<br>● Hand gloves.<br>● Safety shoes.<br>● Face masks.<br>● Earplugs.<br>● Goggles.<br>● Apron.<br>1.8 Importance of sustainability in printing industry.<br>● Environment, Social and Governance (ESG) policy in printing. | | | accordance with production SOP sample.<br>1.2 Printer operation manual details identified based on type of printers.<br>1.3 Error messages confirmed at workstation/server in accordance with printer operating manual.<br>1.4 Printing process paused/stopped if any abnormalities in accordance with printer operating manual.<br><br><u>AFFECTIVE DOMAIN</u><br>1.1 Faulty area/components identified meticulously.<br>1.2 Printer abnormalities observed thoroughly.<br>1.3 Integrity in performing job practised at all times.<br>1.4 Occupational safety standards related to printing industry complied.<br>1.5 ESG policy adhered to in working environment at all times. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | ● Benefits of ESG.<br>● Refuse, Reduce, Reuse, Repurpose, Recycle (5R) concept.<br>1.9 Importance of Safety and Health procedures in workplace<br>● People.<br>● Machinery.<br>● Materials. | | | 1.6 Environmental regulations related to printing industry complied. |
| 2. Carry out digital printer diagnostic process. | 2.1 Safety procedure of diagnostic test.<br>2.2 Functionality of related submodules components and materials:<br>● Optical sensors.<br>● Actuators. | 2.1 Identify related submodules components and materials within the faulty area.<br>2.2 Check faulty areas/ submodules components and symptoms.<br>2.3 Isolate faulty components and materials. | <u>ATTITUDE</u><br>2.1 Analytical in diagnosing the possible causes of irregularities and abnormalities.<br>2.2 Details in confirming faulty areas and symptoms. | <u>COGNITIVE DOMAIN</u><br>2.1 Safety procedure of diagnostic test described.<br>2.2 Functionality of related submodule components and material explained.<br>2.3 Functionality of related materials explained.<br>2.4 Diagnostic test procedure. described.<br>2.5 Documentation procedure explained. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | ● Feed unit/ module and related components.<br>● Transport systems and related components.<br>● AC Power Supplies.<br>● DC Power Supplies.<br>● AC Motors.<br>● DC Motors.<br>● Finishing module.<br>2.3 Functionality of related materials:<br>● Substrate.<br>● Ink/ toner.<br>2.4 Diagnostic test procedure.<br>2.5 Documentation procedure.<br>2.6 Type of servicing reference: | 2.4 Execute diagnostic test. | SAFETY<br>2.1 Comply with occupational safety standards related to printing industry.<br><br>ENVIRONMENT<br>2.1 Adhere to ESG policy in working environment at all times.<br>2.2 Comply with environmental regulations related to printing industry. | 2.6 Type of servicing references listed and explained.<br><br>PSYCHOMOTOR DOMAIN<br>2.1 Faulty areas/ submodule components and symptoms confirmed in accordance with service procedure.<br>2.2 Related components and material identified within the faulty area based on error messages and observation results.<br>2.3 Faulty components and materials isolated and confirmed in accordance with printer service manual.<br>2.4 Possible causes due to the components or material irregularities and abnormalities diagnosed and documented in accordance with printer service manual.<br><br>AFFECTIVE DOMAIN |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | ● Printer service manual.<br>● Standard Operating Procedure. | | | 2.1 Possible causes of irregularities and abnormalities diagnosed analytically.<br>2.2 Detailed in confirming faulty area and symptoms demonstrated.<br>2.3 Occupational safety standards related to printing industry complied.<br>2.4 ESG policy adhered to in working environment at all times.<br>2.5 Environmental regulations related to printing industry complied. |
| 3. Carry out digital printer troubleshooting process. | 3.1 Troubleshooting procedure.<br>3.2 Digital printing operation procedure.<br>3.3 Digital printer maintenance procedure.<br>3.4 Escalation procedure:<br>● Authority. | 3.1 Determine troubleshooting methodology.<br>3.2 Check severity of fault.<br>3.3 Execute corrective action.<br>3.4 Test run digital printer.<br>3.5 Verify printing results. | <u>ATTITUDE</u><br>3.1 Systematic in troubleshooting faulty machines.<br>3.2 Details in checking severity of fault.<br><br><u>SAFETY</u><br>3.1 Comply with occupational safety standards related to | <u>COGNITIVE DOMAIN</u><br>3.1 Troubleshooting procedure described.<br>3.2 Digital printing operation procedure described.<br>3.3 Digital printer maintenance procedure described.<br>3.4 Escalation procedure described.<br>3.5 Organisation chart explained. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | • Responsibility.<br>• Time essence.<br>3.5 Organisation chart:<br>• Authorised personnel.<br>• Hierarchy.<br>• Responsibility.<br>• Time essence.<br>3.6 Troubleshooting reporting format.<br>3.7 Troubleshooting reporting content:<br>• Cause and effect.<br>• Rectification requirements<br>• Component to be replaced. | 3.6 Prepare troubleshooting report. | printing industry.<br><br>ENVIRONMENT<br>3.1 Adhere to ESG policy in working environment at all times.<br>3.2 Comply with environmental regulations related to printing industry. | 3.6 Troubleshooting reporting format explained.<br>3.7 Troubleshooting reporting content explained.<br><br>PSYCHOMOTOR DOMAIN<br>3.1 Severity of fault inclusive breakdown time confirmed in accordance with troubleshooting procedure.<br>3.2 Corrective action plan identified and executed in accordance with troubleshooting procedure based on printer manual.<br>3.3 Printer functionality and operability fixed and tested in accordance with printer manual<br>3.4 Printing results quality verified in accordance with printing specifications.<br>3.5 Troubleshooting report including cause and correction status finalised and produced in accordance with relevant production SOP sample and reporting format. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | • Corrective actions taken and result.<br>• Unresolved issue.<br>• Severity of fault. | | | 3.6 Troubleshooting process results on major issues escalated to related departments or external parties (vendor/supplier) for further action in accordance with production SOP sample.<br><br><u>AFFECTIVE DOMAIN</u><br>3.1 Faulty machine troubleshooted systematically.<br>3.2 Detailed in checking severity of fault demonstrated.<br>3.3 Occupational safety standards related to printing industry complied.<br>3.4 ESG policy adhered to in working environment at all times.<br>3.5 Environmental regulations related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 4. Coordinate digital printing machine maintenance. | 4.1 Machine maintenance /service schedule documents:<br>• Manufacturer/ supplier service contract.<br>• Production scheduling/ planning.<br>• Production maintenance plan/printing machine breakdown report.<br>4.2 Types of planned maintenance:<br>• Scheduled.<br>• Predictive.<br>• Preventive.<br>4.3 Production maintenance servicing information. | 4.1 Interpret machine maintenance/service schedule documents.<br>4.2 Check production schedule.<br>4.3 Plan production maintenance schedule.<br>4.4 Arrange maintenance with authorised party.<br>4.5 Prepare production maintenance report. | ATTITUDE<br>4.1 Attentive to details in checking printing and finishing quality.<br><br>SAFETY<br>4.1 Comply with occupational safety standards related to printing industry.<br><br>ENVIRONMENT<br>4.1 Adhere to ESG policy in working environment at all times.<br>4.2 Comply with environmental regulations related to printing industry. | COGNITIVE DOMAIN<br>4.1 Machine maintenance /service schedule documents explained.<br>4.2 Type of planned maintenance listed and explained.<br>4.3 Production maintenance servicing information explained.<br>4.4 Maintenance coordination skill described.<br>4.5 Production maintenance reporting format explained.<br><br>PSYCHOMOTOR DOMAIN<br>4.1 Planned maintenance (scheduled, predictive, preventive) /service schedule information determined based on type of machines and manufacturer/supplier service contract.<br>4.2 Type of printer, type of finishing machine, machine quantity, shutdown schedule identified and confirmed for |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | 4.4 Maintenance coordination skill:<br>• Machine job schedule.<br>• Production maintenance plan/ machine breakdown status details.<br>• Communication technique with maintenance authorized party.<br>4.5 Production maintenance reporting format. | | | servicing in accordance with production SOP sample.<br>4.3 Maintenance date, time and maintenance duration scheduled in accordance with production schedule/planning.<br>4.4 Production maintenance plan/machine breakdown status liaised with authorised party including in-house maintenance department/personnel or machine supplier in accordance with production SOP sample.<br>4.5 Production maintenance report format determined, maintenance status updated, supporting documents (service report) attached and final reports generated in accordance with production SOP sample and reporting format. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | | | | AFFECTIVE DOMAIN<br>4.1 Attentive to details in checking printing and finishing quality demonstrated.<br>4.2 Occupational safety standards related to printing industry complied.<br>4.3 ESG policy adhered to in working environment at all times.<br>4.4 Environmental regulations related to printing industry complied. |

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

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## 15.5 Perform digital printing technical supervision.

| | | | |
|---|---|---|---|
| SECTION | (C) Manufacturing | | |
| GROUP | (181) Printing and Service Activities Related to Printing | | |
| AREA | Digital Printing | | |
| NOSS TITLE | Digital Printing Production | | |
| COMPETENCY UNIT TITLE | Perform digital printing technical supervision. | | |
| LEARNING OUTCOMES | The learning outcomes of this competency are to enable the trainees to ensure production runs smoothly and to achieve company and production targets in accordance with planned schedule, customer requirements and company Standard Operating Procedure (SOP).<br><br>Upon completion of this competency unit, trainees should be able to:<br>1. Prepare operation work schedule.<br>2. Maintain production stock inventory.<br>3. Prepare production reports.<br>4. Conduct on-job technical training. | | |
| TRAINING PREREQUISITE (SPECIFIC) | Not Available | | |
| CU CODE | C181-001-3:2023-C05 | NOSS LEVEL | Three (3) |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 1. Prepare operation work schedule. | 1.1 Workload requirements for accumulative job docket:<br>• Estimation of manpower.<br>• Estimation of job running | 1.1 Interpret job docket.<br>1.2 Determine work schedule format.<br>1.3 Determine workflow detail.<br>1.4 Set time frame for workflow. | ATTITUDE<br>1.1 Proactive in gathering job information.<br>1.2 Analytical and mathematical in identifying workload requirements. | COGNITIVE DOMAIN<br>1.1 Workload requirement for accumulative job docket described.<br>1.2 Work schedule format explained.<br>1.3 Production workflow explained. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | hours/ production time.<br>1.2 Work schedule format.<br>1.3 Production workflow.<br>1.4 Production schedules information:<br>• Job schedule.<br>• Resources availability and capability.<br>• Type of equipment.<br>1.5 Workforce schedule:<br>• Job rotation.<br>• Shift.<br>• Deployment.<br>• Support workforce arrangement.<br>1.6 Importance of sustainability in printing industry. | 1.5 Determine machine availability.<br>1.6 Assign production manpower.<br>1.7 Produce work schedule. | 1.3 Non-biased in allocating manpower and schedule.<br>1.4 Integrity practices in performing job at all times.<br><br><u>SAFETY</u><br>1.1 Comply with occupational safety standards related to printing industry.<br><br><u>ENVIRONMENT</u><br>1.1 Adhere to ESG policy in working environment at all times.<br>1.2 Comply with environmental regulations related to printing industry. | 1.4 Production schedules information explained.<br>1.5 Workforce schedule explained.<br>1.6 Importance of sustainability in printing industry elaborated.<br>1.7 Importance of Safety and Health procedures in workplace described.<br><br><u>PSYCHOMOTOR DOMAIN</u><br>1.1 Job docket information such as delivery date, printing quantity identified and finalised for scheduling purposes in accordance with production planning sample.<br>1.2 Work schedule format template and suitability determined in accordance with job docket requirements.<br>1.3 Workflow detailed out in accordance with work instruction sample.<br>1.4 Time frame for workflow set in accordance with job sheet requirements.<br>1.5 Machines availability via job load confirmed based on job requirements. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | • Environment, Social and Governance (ESG) policy in printing.<br>• Benefits of ESG.<br>• Refuse, Reduce, Reuse, Repurpose, Recycle (5R) concept.<br>1.7 Importance of Safety and Health procedures in workplace<br>• People.<br>• Machinery.<br>• Materials. | | | 1.6 Production manpower assignment allocated in accordance with job requirements.<br>1.7 Work schedule content accuracy and adequacy confirmed, systematically arranged and generated in accordance with format.<br><br><u>AFFECTIVE DOMAIN</u><br>1.1 Job information gathered proactively.<br>1.2 Workload requirements identified analytically.<br>1.3 Non-biased in allocating manpower and schedule demonstrated.<br>1.4 Integrity in performing job practised at all times.<br>1.5 Occupational safety standards related to printing industry complied.<br>1.6 ESG policy adhered to in working environment at all times.<br>1.7 Environmental regulations related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 2. Maintain production stock inventory. | 2.1 Inventory management procedure/ system.<br>2.2 Inventory management checklist format.<br>2.3 Types of inventory schedule:<br>• Random stock check.<br>• Daily/ weekly/ monthly/ yearly stock check.<br>2.4 Inventory management system:<br>• First In First Out (FIFO).<br>• Last In First Out (LIFO).<br>• Par stock<br>2.5 Stocktake activities:<br>• Consumable inventory | 2.1 Interpret inventory management procedures/ system requirements.<br>2.2 Check stock inventory record.<br>2.3 Calculate stock level.<br>2.4 Identify stock inventory deviation.<br>2.5 Analyse causes for deviation.<br>2.6 Report stock inventory deviation.<br>2.7 Replenish stock.<br>2.8 Update stock inventory record. | ATTITUDE<br>2.1 Systematic in maintaining stock inventory.<br>2.2 Analytical in identifying inventory deviation.<br>2.3 Responsible and accountable for maintaining stock.<br><br>SAFETY<br>2.1 Comply with occupational safety standards related to printing industry.<br><br>ENVIRONMENT<br>2.1 Adhere to ESG policy in working environment at all times.<br>2.2 Comply with environmental regulations related to printing industry. | COGNITIVE DOMAIN<br>2.1 Inventory management procedure/ system described.<br>2.2 Inventory management checklist format explained.<br>2.3 Types of inventory schedule listed.<br>2.4 Inventory management system explained.<br>2.5 Stocktake activities explained.<br>2.6 Update stock inventory record explained.<br>2.7 Stock counting method explained.<br>2.8 Techniques of stock count explained.<br>2.9 Safety, Health and Environment requirements described.<br>2.10 Inventory data recording procedure described.<br><br>PSYCHOMOTOR DOMAIN<br>2.1 Inventory management procedures/ system requirements such as First In, First Out (FIFO) and Last In, First Out (LIFO) determined in |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | record checking.<br>• Tagging.<br>• Labelling.<br>2.6 Update stock inventory record:<br>• Actual stock.<br>• Deviation.<br>2.7 Stock counting method:<br>• Visual.<br>• Documentation (control sheet).<br>2.8 Techniques of stock count:<br>• Height.<br>• Weight.<br>• Bundle.<br>• Ream.<br>• Roll.<br>2.9 Safety, Health and Environment requirements:<br>• Regulatory and legislative compliance. | | | accordance with production SOP sample.<br>2.2 Stock such as operational consumables/raw materials identified in accordance with inventory recording system (offline/online).<br>2.3 Consumable inventory record (expiry date, lifespan and raw material specification) checked in accordance with actual stock and material safety data sheet (MSDS).<br>2.4 Stock level confirmed in accordance with inventory management system.<br>2.5 Causes of deviation evaluated in accordance with inventory system procedure.<br>2.6 Stock inventory deviation documented in accordance with inventory management system.<br>2.7 Consumable/ faulty stock items replenished in accordance with inventory management system.<br>2.8 Consumable inventory data accuracy confirmed and record completed in accordance with |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | • Material Safety Data Sheet (MSDS).<br>2.10 Inventory data recording procedure. | | | production SOP sample and inventory management system.<br><br>AFFECTIVE DOMAIN<br>2.1 Stock inventory maintained systematically.<br>2.2 Inventory deviation identified analytically.<br>2.3 Responsible and accountable for maintaining stock demonstrated.<br>2.4 Occupational safety standards related to printing industry complied.<br>2.5 ESG policy adhered to in working environment at all times.<br>2.6 Environmental regulations related to printing industry complied. |
| 3. Prepare production reports. | 3.1 Report writing skill.<br>3.2 Types of production record/report/ feedback:<br>• Productivity. | 3.1 Determine types of production report.<br>3.2 Gather production record/report/ feedback.<br>3.3 Compile supporting documents/material. | ATTITUDE<br>3.1 Clear and precise in writing production report.<br>3.2 Analytical in analysing production | COGNITIVE DOMAIN<br>3.1 Report writing skill explained.<br>3.2 Types of production record/report/feedback listed and explained.<br>3.3 Production reports format and content explained. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | • Quality.<br>3.3 Production reports format and content:<br>• Objective.<br>• Scheduled.<br>3.4 Supporting documents/ material:<br>• Production output.<br>• Production monitoring checklist.<br>• Production material requisition sheet.<br>• Breakdown time/lost hours.<br>• Continuous improvement recommendation.<br>3.5 Types of production report: | 3.4 Analyse production record/ data/ feedback.<br>3.5 Summarise production data.<br>3.6 Recommend continuous improvement if any.<br>3.7 Produce production report. | record/ report/ feedback.<br>3.3 Resourceful in compiling production activities.<br><br>SAFETY<br>3.1 Comply with occupational safety standards related to printing industry.<br><br>ENVIRONMENT<br>3.1 Practise Refuse, Reduce, Reuse, Repurpose, Recycle (5R) concept in working environment.<br>3.2 Comply with environmental regulations related to printing industry. | 3.4 Supporting documents/ material listed and explained.<br>3.5 Types of production report listed.<br>3.6 Standard Operating Procedure (SOP) described.<br>3.7 Reporting system explained.<br><br>PSYCHOMOTOR DOMAIN<br>3.1 Production report format, content determined based on report objective and types of report.<br>3.2 Production record/report/ feedback collected in accordance with production SOP sample.<br>3.3 Supporting documents/ material related to reporting objectives attached in accordance with reporting format.<br>3.4 Production data assessed in accordance with production SOP sample.<br>3.5 Production data and status summarised based on reporting format. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | • Printer efficiency.<br>• Printer utilisation.<br>• Printer downtime.<br>• Maintenance.<br>• Wastage.<br>3.6 Standard Operating Procedure (SOP).<br>3.7 Reporting system:<br>• Management Information System (MIS).<br>• Manually. | | | 3.6 Production report compiled and recommendation proposed in accordance with production SOP sample and reporting system (online/offline).<br>3.7 Production report generated in accordance with reporting format.<br><br><u>AFFECTIVE DOMAIN</u><br>3.1 Production report produced clearly and precisely.<br>3.2 Production record/ report/ feedback analysed analytically.<br>3.3 Resourcefulness in compiling production activities demonstrated.<br>3.4 Occupational safety standards related to printing industry complied.<br>3.5 ESG policy adhered to in working environment at all times.<br>3.6 Environmental regulations related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 4. Conduct on-job technical training. | 4.1 Training detail requirement:<br>• Type of training.<br>• Training objective.<br>• Training schedule.<br>4.2 Training scope requirement:<br>• Operation/ production.<br>• Maintenance.<br>• Procedures.<br>4.3 Training methodology:<br>• Practical.<br>• Theory.<br>4.4 Training facilities:<br>• Tool, equipment and material.<br>• Training room.<br>• Training materials. | 4.1 Receive training requests /instructions.<br>4.2 Interpret training details requirement.<br>4.3 Determine training scope.<br>4.4 Arrange training facilities.<br>4.5 Carry out training programme.<br>4.6 Compile technical training feedback.<br>4.7 Evaluate training programme. | <u>ATTITUDE</u><br>4.1 Enthusiastic in conducting on-job technical training.<br>4.2 Resourceful in gathering feedback on training programme effectiveness.<br><br><u>SAFETY</u><br>4.1 Comply with occupational safety standards related to printing industry.<br><br><u>ENVIRONMENT</u><br>4.1 Practise Refuse, Reduce, Reuse, Repurpose, Recycle (5R) concept in working environment.<br>4.2 Comply with environmental regulations related to printing industry. | <u>COGNITIVE DOMAIN</u><br>4.1 Training detail requirement described.<br>4.2 Training scope requirement described.<br>4.3 Training methodology explained.<br>4.4 Training facilities listed and explained.<br>4.5 On-job technical training procedure described.<br><br><u>PSYCHOMOTOR DOMAIN</u><br>4.1 Training details requirements including type of training, objective, schedule identified based on training requests/instructions.<br>4.2 Training scope (operation, maintenance, procedures, etc.) confirmed based on the training requirements.<br>4.3 Training facilities including rooms, audio-visual aids and furniture organised in accordance with training details. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | • Audio-Visual Aid.<br>4.5 On-job technical training procedure:<br>• Programme preparation.<br>• Programme execution.<br>• Programme performance assessment.<br>• Training reporting system. | | | 4.4 Training programme approach (theoretically or practically) executed in accordance with training details.<br>4.5 Technical training feedback gathered (electronically /manually), summarised and documented in accordance with relevant training procedure.<br>4.6 Training programme performance and audience feedback assessed based on training feedback.<br><br><u>AFFECTIVE DOMAIN</u><br>4.1 On-job technical training conducted enthusiastically.<br>4.2 Resourcefulness in gathering feedback on training programme effectiveness demonstrated.<br>4.3 Occupational safety standards related to printing industry complied.<br>4.4 ESG policy adhered to in working environment at all times. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | | | | 4.5 Environmental regulations related to printing industry complied. |

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

References for Learning Material Development


1 Ashe, T. (2014) Color Management & Quality Output: Working with color from camera to display to print. New York: Focal Press, Taylor & Francis Group. ISBN: 9780240821115

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## 15.6 Perform digital printing customer services.

| | | | |
|---|---|---|---|
| SECTION | (C) Manufacturing | | |
| GROUP | (181) Printing and Service Activities Related to Printing | | |
| AREA | Digital Printing | | |
| NOSS TITLE | Digital Printing Production | | |
| COMPETENCY UNIT TITLE | Perform digital printing customer services. | | |
| LEARNING OUTCOMES | The learning outcomes of this competency are to enable the trainees to ensure customer needs are fulfilled and customer satisfaction maintained in accordance with company policy and SOP.<br><br>Upon completion of this competency unit, trainees should be able to:<br>1. Handle customer enquiries.<br>2. Prepare sales documentation.<br>3. Handle customer feedback.<br>4. Carry out online web-to- print services. | | |
| TRAINING PREREQUISITE (SPECIFIC) | Not Available. | | |
| CU CODE | C181-001-3:2023-E01 | NOSS LEVEL | Three (3) |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 1. Handle customer enquiries. | 1.1 Types of customer channel:<br>• Front desk.<br>• Communication tools.<br>• Chatbot/ Artificial | 1.1 Identify types of enquiries channels.<br>1.2 Compile customer enquiries.<br>1.3 Attend to customer enquiries.<br>1.4 Check types of enquiries. | ATTITUDE<br>1.1 Professional in handling customer enquiries.<br>1.2 Responsive in attending customer enquiries. | COGNITIVE DOMAIN<br>1.1 Types of customer channels listed.<br>1.2 Meet and greet procedure described.<br>1.3 Method to register customer enquiries explained. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | Intelligent (AI).<br>• Digital order form.<br>1.2 Meet and greet procedure:<br>• Service Level Standard (SLS).<br>• Effective communication skills.<br>• Personal grooming.<br>1.3 Method to register customer enquiries:<br>• Manual (Logbook).<br>• System (Computerised Customer Service System).<br>1.4 Types of enquiries: | 1.5 Register customer enquiries.<br>1.6 Provide relevant services to customer. | 1.3 Patience in attending customers.<br>1.4 Polite in attending customers.<br>1.5 Adhere to customer Personal Data Protection Act (PDPA) policy.<br>1.6 Integrity practices in performing job at all times.<br><br><u>SAFETY</u><br>1.1 Comply with occupational safety standards related to printing industry.<br><br><u>ENVIRONMENT</u><br>1.1 Adhere to ESG policy in working environment at all times.<br>1.2 Comply with environmental regulations related to printing industry. | 1.4 Types of enquiries listed and explained.<br>1.5 Type and function of product substrate listed and explained.<br>1.6 Type of digital printing product listed.<br>1.7 Product and service specification explained.<br>1.8 Importance of sustainability in printing industry elaborated.<br>1.9 Importance of Safety and Health procedures in workplace described.<br><br><u>PSYCHOMOTOR DOMAIN</u><br>1.1 Types of enquiries channels such as walk-in, telephone, digital platform (such as social media, chatbot/Artificial Intelligence (AI), e-commerce) and email confirmed in accordance with company Services Level Standards (SLS) sample.<br>1.2 Customer enquiries gathered in accordance with customer service policy.<br>1.3 Customer enquiries resolved in accordance with production |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | • Product specifications.<br>• Quotation.<br>1.5 Types and function of product substrate:<br>• Type of paper.<br>• Plastic.<br>• Tarpaulin.<br>1.6 Types of digital printing product:<br>• Publication.<br>• Non-publication.<br>1.7 Product and service specifications:<br>• Colour.<br>• Size.<br>• Finishing.<br>1.8 Importance of sustainability in printing industry. | | | SOP samples and guidelines (if any).<br>1.4 Types of enquiries such as product specification, quotation and delivery date confirmed in accordance with customer service policy sample.<br>1.5 Customer enquiries registered in accordance with company Services Level Standards (SLS) sample.<br>1.6 Relevant services (publication/non-publication) to customers delivered as per enquiries in accordance with production SOP sample.<br><br><u>AFFECTIVE DOMAIN</u><br>1.1 Customer enquiries handled professionally.<br>1.2 Customer enquiries attended responsively.<br>1.3 Patience in attending customers demonstrated.<br><br>1.4 Customer attended politely. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | ● Environment ,Social and Governance (ESG) policy in printing.<br>● Benefits of ESG.<br>● Refuse, Reduce, Reuse, Repurpose, Recycle (5R) concept.<br>1.9 Importance of Safety and Health procedures in workplace:<br>● People.<br>● Machinery.<br>● Materials. | | | 1.5 Customer Personal Data Protection Act (PDPA) policy adhered to.<br>1.6 Integrity in performing job practised at all times.<br>1.7 Occupational safety standards related to printing industry complied.<br>1.8 ESG policy adhered to in working environment at all times.<br>1.9 Environmental regulations related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 2. Prepare sales documentation. | 2.1 Quotation format content:<br>• Full contact details.<br>• Product details.<br>• Payment terms or schedule.<br>• Price.<br>• Validity of the quotation.<br>• Delivery schedule.<br>• Terms and conditions of offer and acceptance.<br>2.2 Job docket/ order format requirement.<br>2.3 Costing calculation:<br>• Time.<br>• Labour.<br>• Printing quantity. | 2.1 Identify quotation format.<br>2.2 Identify scope of work/ services.<br>2.3 Calculate product and service costs.<br>2.4 Check standard market rate.<br>2.5 Produce sales quotation.<br>2.6 Request sales order confirmation.<br>2.7 Prepare job docket/order. | ATTITUDE<br>2.1 Meticulous in preparing sales quotations.<br>2.2 Responsibility and accountability in preparing sales quotations.<br>2.3 Adhere to customer Personal Data Protection Act (PDPA) policy.<br>2.4 Integrity practices in performing job at all times.<br><br>SAFETY<br>2.1 Comply with occupational safety standards related to printing industry.<br><br>ENVIRONMENT<br>2.1 Adhere to ESG policy in working environment at all times. | COGNITIVE DOMAIN<br>2.1 Quotation format content explained.<br>2.2 Job docket/order format requirement described.<br>2.3 Costing calculation listed and explained.<br>2.4 Sales order procedure described.<br><br>PSYCHOMOTOR DOMAIN<br>2.1 Quotation format including template via online / offline identified in accordance with production SOP sample.<br>2.2 Scope of work/ services identified in accordance with job requirements.<br>2.3 Material and printing services cost estimated in accordance with relevant financial system.<br>2.4 Standard market rate confirmed based on market trends.<br>2.5 Sales quotation formatting, information of price and terms and conditions confirmed and issued in accordance with procurement SOP sample. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | • Material cost.<br>• Hourly machine cost/ minimum charge/cost per copy.<br>2.4 Sales order procedure. | | 2.2 Comply with environmental regulations related to printing industry. | 2.6 Sales order confirmation acquired in accordance with procurement SOP sample.<br>2.7 Job docket/order details, supporting information confirmed, organised and generated in accordance with documentation format.<br><br><u>AFFECTIVE DOMAIN</u><br>2.1 Sales quotation prepared meticulously.<br>2.2 Responsibility and accountabality in preparing sales quotations demonstrated.<br>2.3 Customer Personal Data Protection Act (PDPA) policy adhered to.<br>2.4 Occupational safety standards related to printing industry complied.<br>2.5 ESG policy adhered to in working environment at all times.<br>2.6 Environmental regulations related to printing industry complied. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| 3. Handle customer feedback. | 3.1 Customer feedback:<br>• Verbal.<br>• Written.<br>• Grievances.<br>• Feedback form.<br>• Q&A session.<br>3.2 Customer Service Standard:<br>• Response time during customer services.<br>• Satisfaction level.<br>3.3 Customer services evaluation reporting format. | 3.1 Interpret customer service standards.<br>3.2 Obtain customer feedback.<br>3.3 Evaluate customer satisfaction index during enquires/ complaint handling.<br>3.4 Comply response time during customer services.<br>3.5 Update customer feedback evaluation report. | <u>ATTITUDE</u><br>3.1 Detail and meticulous in assessing customer service effectiveness.<br>3.2 Adhere to customer Personal Data Protection Act (PDPA) policy.<br><br><u>SAFETY</u><br>3.1 Comply with occupational safety standards related to printing industry.<br><br><u>ENVIRONMENT</u><br>3.1 Adhere to ESG policy in working environment at all times.<br>3.2 Comply with environmental regulations related to printing industry. | <u>COGNITIVE DOMAIN</u><br>3.1 Customer feedback explained.<br>3.2 Customer Service Standard explained.<br>3.3 Customer services evaluation reporting format explained.<br><br><u>PSYCHOMOTOR DOMAIN</u><br>3.1 Customer service standard content including company/customer confidentiality and privacy determined in accordance with company policy sample.<br>3.2 Customer feedback gathered in accordance with customer service reporting system.<br>3.3 Customer satisfaction level during enquires/complaint handling assessed in accordance with production SOP sample and guidelines.<br>3.4 Response time during customer services assessed in accordance with company SLS sample.<br>3.5 Customer feedback evaluation report completed in accordance with reporting format. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | | | | AFFECTIVE DOMAIN<br>3.1 Customer service effectiveness assessed in detailed and meticulously.<br>3.2 Customer Personal Data Protection Act (PDPA) policy adhered to.<br>3.3 Occupational safety standards related to printing industry complied.<br>3.4 ESG policy adhered to in working environment at all times.<br>3.5 Environmental regulations related to printing industry complied. |
| 4. Carry out online web-to- print services. | 4.1 Types of online web-to-print platform.<br>4.2 Online web-to-print job order specification.<br>4.3 Online web-to-print order processing procedure.<br>4.4 Online order print status | 4.1 Obtain online web-to-print job orders.<br>4.2 Interpret online web-to-print job order specifications.<br>4.3 Execute online web-to-print order.<br>4.4 Update online web-to-print order status. | ATTITUDE<br>4.1 Detail and meticulous in assessing customer online web-to-print order.<br>4.2 Adhere to customer Personal Data Protection Act (PDPA) policy. | COGNITIVE DOMAIN<br>4.1 Types of online web-to-print platform listed.<br>4.2 Online web-to-print job order specification explained.<br>4.3 Online web-to-print order processing procedure described.<br>4.4 Online order print status response method requirements described. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | response method requirement. | | SAFETY<br>4.1 Comply with occupational safety standards related to printing industry.<br><br>ENVIRONMENT<br>4.1 Adhere to ESG policy in working environment at all times.<br>4.2 Comply with environmental regulations related to printing industry. | PSYCHOMOTOR DOMAIN<br>4.1 Online web-to-print job order received in accordance with platform.<br>4.2 Online web-to-print job order specification determined in accordance with job requirements.<br>4.3 Online web-to-print order processed in accordance with job specifications.<br>4.4 Online order web-to-print status responded in accordance with production SOP sample.<br><br>AFFECTIVE DOMAIN<br>4.1 Customer online web-to-print order assessed in detailed and meticulously.<br>4.2 Customer Personal Data Protection Act (PDPA) policy adhered to.<br>4.3 Occupational safety standards related to printing industry complied.<br>4.4 ESG policy adhered to in working environment at all times. |

| WORK ACTIVITIES | RELATED KNOWLEDGE | RELATED SKILLS | ATTITUDE/ SAFETY/ ENVIRONMENT | ASSESSMENT CRITERIA |
|---|---|---|---|---|
| | | | | 4.5 Environmental regulations related to printing industry complied. |

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

References for Learning Material Development


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2 Ashe, T. (2014) Color Management & Quality Output: Working With Color From Camera To Display To Print. New York: Focal Press, Taylor & Francis Group. ISBN: 9780240821115

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5 Rahim M. Sail. et al. 2007. Handbook on Social Skills and Social Values in Technical Education and Vocational Training, 2nd Edition 2007. Serdang. Department of Skills Development (DSD). ISBN:9789675026218.

6 Stevens, D. (2012) Brilliant Customer Service. Harlow: Prentice Hall. ISBN: 9780273738077.

## 16. Delivery Mode

The following are the **recommended** training delivery modes: -

| KNOWLEDGE | SKILL |
|---|---|
| • Lecture<br>• Group discussion<br>• E-learning, self-paced<br>• E-learning, facilitate<br>• Case study or Problem based learning (PBL)<br>• Self-paced learning, non-electronic<br>• One-on-one tutorial<br>• Shop talk<br>• Seminar | • Demonstration<br>• Simulation<br>• Project<br>• Scenario based training (SBT)<br>• Role play<br>• Coaching<br>• Observation<br>• Mentoring |

Skills training and skills assessment of trainees should be implemented in accordance with TEM requirements and actual situation.

## 17. Tools, Equipment and Materials (TEM)

**DIGITAL PRINTING PRODUCTION**

**LEVEL 3**

| CU | CU CODE | COMPETENCY UNIT TITLE |
|---|---|---|
| C01 | C181-001-3:2023-C01 | Perform digital printer colour profiling. |
| C02 | C181-001-3:2023-C02 | Perform digital printing production control. |
| C03 | C181-001-3:2023-C03 | Perform digital printing quality assurance. |
| C04 | C181-001-3:2023-C04 | Perform digital printing maintenance support. |
| C05 | C181-001-3:2023-C05 | Perform digital printing technical supervision. |
| E01 | C181-001-3:2023-E01 | Perform digital printing customer services. |

* Items listed refer to TEM's **minimum requirement** for skills delivery only.

| NO. | ITEM* | RATIO (TEM : Trainees or AR = As Required) | | | | | |
|---|---|---|---|---|---|---|---|
| | | C01 | C02 | C03 | C04 | C05 | E01 |
| **A. Tools** | | | | | | | |
| 1 | Cleaning Tools (High Efficiency Particulate Air (HEPA) vacuum, broom, mop, etc.) | | | 1:25 | 1:25 | | |
| 2 | Color Chart | | | 1:25 | | | |
| 3 | Colour profiling software | 1:1 | | | | | |
| 4 | Environmental Quality Act 1974 (Act127) | 1:1 | 1:1 | 1:1 | 1:1 | | |
| 5 | Log book and checklist | | 1:25 | 1:25 | 1:25 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | Machine maintenance tools (adjustable spanner, Allen keys, screw drivers, special tools, etc.) | | | | 1:15 | | |
| 7 | Machine manufacturing manual | | | 1:25 | 1:25 | | |
| 8 | Magnifier Glass | | 1:1 | 1:1 | 1:1 | | |
| 9 | Material Safety Data Sheet (MSDS) | | 1:1 | 1:1 | 1:1 | | |
| 10 | Measurement Tools (Spectrophotometer, Densitometer, Steel ruler, light table/box, etc.) | | 1:15 | 1:15 | 1:15 | | |
| 11 | Occupational Safety and Health Act | 1:1 | 1:1 | 1:1 | 1:1 | | |
| 12 | Office application | 1:1 | 1:1 | 1:1 | 1:1 | 1:1 | 1:1 |
| 13 | Page layout / Design software | 1:1 | 1:1 | 1:1 | 1:1 | | |
| 14 | Personal Protective Equipment (PPE) | 1:1 | 1:1 | 1:1 | 1:1 | 1:1 | 1:1 |
| 15 | Printer operation manual | 1:25 | 1:25 | 1:25 | 1:25 | | |
| 16 | Product Safety Data Sheet (PSDS) | | 1:1 | 1:1 | 1:1 | | |
| 17 | Sample of breakdown report | | | | 1:1 | | |
| 18 | Sample of Company Standard Operating Procedure and policy | 1:25 | 1:25 | 1:25 | 1:25 | 1:25 | 1:25 |
| 19 | Sample of customer feedback form | | | | | | 1:1 |
| 20 | Sample of job docket | 1:1 | 1:1 | 1:1 | 1:1 | 1:1 | 1:1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 21 | Sample of maintenance schedule | | | | 1:1 | | |
| 22 | Sample of production procurement | | | | | | 1:1 |
| 23 | Sample of production report | | | | | 1:1 | |
| 24 | Sample of production schedule | | 1:1 | | | 1:1 | |
| 25 | Sample of Purchase Order (PO) | | | | | | 1:1 |
| 26 | Sample of Sales Quotation | | | | | | 1:1 |
| 27 | Sample of Service Level Standard | | | | | | 1:1 |
| 28 | Sample of stock inventory record | | | | | 1:1 | |
| 29 | Sample/mock up | | | 1:25 | | | |
| 30 | Training Facility (Audio Visual Aid) | | | | | 1:25 | |
| 31 | Web to print software | | | | | | 1:1 |
| **B. Equipment** | | | | | | | |
| 1 | Computer | 1:1 | 1:1 | 1:1 | 1:1 | | |
| 2 | Digital Printer (Inkjet/Laser jet/ Digital Press) | 1:25 | 1:25 | 1:25 | 1:25 | | |
| 3 | Finishing machine(binder , trimmer, cutter, folder, puncher, etc) | | | 1:25 | 1:25 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | Heavy duty rack | | | 1:25 | 1:25 | | |
| 5 | Network connectivity (LAN, WAN) | 1:25 | 1:25 | 1:25 | 1:25 | | |
| 6 | Roll rack | | | 1:25 | 1:25 | | |
| 7 | Scanner | 1:25 | | | | | |
| **C. Materials** | | | | | | | |
| 1 | Calibration Test Chart | 1:25 | | | | | |
| 2 | Cleaning materials (lint-free cloth, cotton, sponge, solution, etc.) | | | AR | AR | | |
| 3 | Finishing material(Stapler, glue, varnish, thread, rope , combinding , etc.) | | 1:25 | 1:25 | 1:25 | | |
| 4 | Printing consumables (drum, toner/ ink, replenisher, storage fluid, etc.) | 1:25 | 1:25 | 1:25 | 1:25 | | |
| 5 | Printing substrate (paper, plastic, tarpaulin, synthetic paper, etc.) | 1:1 | 1:1 | 1:1 | 1:1 | | |
| 6 | Training materials | | | | | 1:1 | |

## 18. Competency Weightage

The following table shows the percentage of training priorities based on consensus made by the Standard Development Committee (SDC).

**DIGITAL PRINTING PRODUCTION**

**LEVEL 3**

| CU CODE | COMPETENCY UNIT TITLE | COMPETENCY UNIT WEIGHTAGE | WORK ACTIVITIES | WORK ACTIVITIES WEIGHTAGE |
|---|---|---|---|---|
| C181-001-3:2023-C01 | Perform digital printer colour profiling. | 30% | 1. Check printer colour profiling requirements. | 30% |
| | | | 2. Carry out printer profiling preparation. | 30% |
| | | | 3. Carry out printer colour profiling. | 40% |
| C181-001-3:2023-C02 | Perform digital printing production control. | 35% | 1. Check production control requirements. | 25% |
| | | | 2. Monitor digital printing production. | 25% |
| | | | 3. Control digital printing production wastage. | 35% |
| | | | 4. Carry out finishing process verification. | 15% |
| C181-001-3:2023-C03 | Perform digital printing quality assurance. | 15% | 1. Carry out incoming raw material inspection. | 25% |
| | | | 2. Carry out digital printer setup verification. | 25% |
| | | | 3. Carry out product sample verification. | 25% |
| | | | 4. Carry out final product quality inspections. | 25% |

| | | | | |
|---|---|---|---|---|
| C181-001-3:2023-C04 | Perform digital printing maintenance support. | 10% | 1. Carry out digital printer faulty inspections. | 20% |
| | | | 2. Carry out digital printer diagnostic process. | 20% |
| | | | 3. Carry out digital printer troubleshooting process.. | 40% |
| | | | 4. Coordinate digital printing machine maintenance | 20% |
| C181-001-3:2023-C05 | Perform digital printing technical supervision. | 10% | 1. Prepare operation work schedule. | 20% |
| | | | 2. Maintain production stock inventory. | 10% |
| | | | 3. Prepare production reports. | 30% |
| | | | 4. Conduct on-job technical training. | 40% |
| TOTAL PERCENTAGE (CORE COMPETENCY) | | = 100% | | |
| C181-XXX-3:2023-E01 | Perform digital printing customer services. | 30% | 1. Handle customer enquiries. | 30% |
| | | | 2. Prepare sales documentation. | 25% |
| | | | 3. Handle customer feedback. | 25% |
| | | | 4. Carry out online web-to- print services. | 20% |
| TOTAL PERCENTAGE (ELECTIVE COMPETENCY) | | =30% | | |

# APPENDICES

# NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR:

# DIGITAL PRINTING PRODUCTION

# LEVEL 3

# 19. Appendices

## 19.1 Appendix A: Competency Profile Chart For Teaching & Learning ($CPC_{PdP}$)

### i. CU to $CU_{PdP}$ Correlation

| | | | |
|---|---|---|---|
| SECTION | (C) MANUFACTURING | | |
| GROUP | (181) PRINTING AND SERVICE ACTIVITIES RELATED TO PRINTING | | |
| AREA | DIGITAL PRINTING | | |
| NOSS TITLE | DIGITAL PRINTING PRODUCTION | | |
| NOSS LEVEL | THREE (3) | NOSS CODE | C181-001-3:2023 |

| CU CODE | CU TITLE | $CU_{PdP}$ TITLE<br>For Teaching & Learning |
|---|---|---|
| C181-001-3:2023-C01 | PERFORM DIGITAL PRINTER COLOUR PROFILING | DIGITAL PRINTER COLOUR PROFILING |
| C181-001-3:2023-C02 | PERFORM DIGITAL PRINTING PRODUCTION CONTROL | DIGITAL PRINTING PRODUCTION CONTROL |
| C181-001-3:2023-C03 | PERFORM DIGITAL PRINTING QUALITY ASSURANCE | DIGITAL PRINTING QUALITY ASSURANCE |
| C181-001-3:2023-C04 | PERFORM DIGITAL PRINTING MAINTENANCE SUPPORT | DIGITAL PRINTING TECHNICAL SUPPORT |
| C181-001-3:2023-C05 | PERFORM DIGITAL PRINTING TECHNICAL SUPERVISION | DIGITAL PRINTING TECHNICAL SUPERVISION |
| C181-001-3:2023-E01 | PERFORM DIGITAL PRINTING CUSTOMER SERVICES | DIGITAL PRINTING CUSTOMER SERVICES |

### ii. Competency Profile Chart for Teaching & Learning ($CPC_{PdP}$)

| | | | |
|---|---|---|---|
| SECTION | (C) MANUFACTURING | | |
| GROUP | (181) PRINTING AND SERVICE ACTIVITIES RELATED TO PRINTING | | |
| AREA | DIGITAL PRINTING | | |
| NOSS TITLE | DIGITAL PRINTING PRODUCTION | | |
| NOSS LEVEL | THREE (3) | NOSS CODE | C181-001-3:2023 |

| | ↤COMPETENCY UNIT↦ | ↤WORK ACTIVITIES↦ | | | |
|---|---|---|---|---|---|
| CORE | DIGITAL PRINTER COLOUR PROFILING | CHECK PRINTER COLOUR PROFILING REQUIREMENTS | CARRY OUT PRINTER PROFILING PREPARATION | CARRY OUT PRINTER COLOUR PROFILING | |
| | C181-001-3:2023-C01 | C181-001-3:2023-C01-W01 | C181-001-3:2023-C01-W02 | C181-001-3:2023-C01-W03 | |
| | DIGITAL PRINTING PRODUCTION CONTROL | CHECK PRODUCTION CONTROL REQUIREMENTS | MONITOR DIGITAL PRINTING PRODUCTION | CONTROL DIGITAL PRINTING PRODUCTION WASTAGE | CARRY OUT FINISHING PROCESS VERIFICATION |
| | C181-001-3:2023-C02 | C181-001-3:2023-C02-W01 | C181-001-3:2023-C02-W02 | C181-001-3:2023-C02-W03 | C181-001-3:2023-C02-W04 |

| ↤COMPETENCY UNIT↦ | | ↤WORK ACTIVITIES↦ | | | |
|---|---|---|---|---|---|
| CORE | DIGITAL PRINTING QUALITY ASSURANCE | CARRY OUT INCOMING RAW MATERIAL INSPECTION | CARRY OUT DIGITAL PRINTER SETUP VERIFICATION | CARRY OUT PRODUCT SAMPLE VERIFICATION | CARRY OUT FINAL PRODUCT QUALITY INSPECTIONS |
| | C181-001-3:2023-C03 | C181-001-3:2023-C03-W01 | C181-001-3:2023-C03-W02 | C181-001-3:2023-C03-W03 | C181-001-3:2023-C03-W04 |
| | DIGITAL PRINTING TECHNICAL SUPPORT | CARRY OUT DIGITAL PRINTER FAULTY INSPECTIONS | CARRY OUT DIGITAL PRINTER DIAGNOSTIC PROCESS | CARRY OUT DIGITAL PRINTER TROUBLESHOOTING PROCESS. | COORDINATE DIGITAL PRINTING MACHINE MAINTENANCE |
| | C181-001-3:2023-C04 | C181-001-3:2023-C04-W01 | C181-001-3:2023-C04-W02 | C181-001-3:2023-C04-W03 | C181-001-3:2023-C04-W04 |
| | DIGITAL PRINTING TECHNICAL SUPERVISION | PREPARE OPERATION WORK SCHEDULE | MAINTAIN PRODUCTION STOCK INVENTORY | PREPARE PRODUCTION REPORTS | CONDUCT ON-JOB TECHNICAL TRAINING |
| | C181-001-3:2023-C05 | C181-001-3:2023-C05-W01 | C181-001-3:2023-C05-W02 | C181-001-3:2023-C05-W03 | C181-001-3:2023-C05-W04 |

| ↤COMPETENCY UNIT↦ | | ↤WORK ACTIVITIES↦ | | | |
|---|---|---|---|---|---|
| ELECTIVE | DIGITAL PRINTING CUSTOMER SERVICES | HANDLE CUSTOMER ENQUIRIES | PREPARE SALES DOCUMENTATION | HANDLE CUSTOMER FEEDBACK | CARRY OUT ONLINE WEB-TO- PRINT SERVICES |
| | C181-001-3:2023-E01 | C181-001-3:2023-E01-W01 | C181-001-3:2023-E01-W02 | C181-001-3:2023-E01-W03 | C181-001-3:2023-E01-W04 |

**Notes:**

$CPC_{PdP}$ is meant to be used in Teaching and Learning context which is generated by conversion of the action verb in the CU Title to a noun in the $CU_{PdP}$ Title from the given CPC sets.

## 19.2 Appendix B: Element Content Weightage

**OSH - OCCUPATIONAL SAFETY AND HEALTH**
**SD - SUSTAINABLE DEVELOPMENT**
**M&A - MANAGEMENT AND ADMINISTRATION**
**IT - INDUSTRY TECHNOLOGICAL ADVANCES**

**DIGITAL PRINTING PRODUCTION**
**LEVEL 3**

| CU CODE | CU TITLE | ELEMENT CONTENT WEIGHTAGE | | | |
|---|---|---|---|---|---|
| | | OSH | SD | M&A | IT |
| C181-001-3:2023-C01 | Perform digital printer colour profiling | 20% | 20% | 10% | 40% |
| C181-001-3:2023-C02 | Perform digital printing production control | 30% | 30% | 20% | 15% |
| C181-001-3:2023-C03 | Perform digital printing quality assurance | 10% | 10% | 20% | 15% |
| C181-001-3:2023-C04 | Perform digital printing maintenance support | 30% | 30% | 10% | 15% |

| CU CODE | CU TITLE | ELEMENT CONTENT WEIGHTAGE | | | |
|---|---|---|---|---|---|
| | | OSH | SD | M&A | IT |
| C181-001-3:2023-C05 | Perform digital printing technical supervision | 10% | 10% | 40% | 15% |
| TOTAL ELEMENT CONTENT WEIGHTAGE | | 100% | 100% | 100% | 100% |
| NOTES | | C02 and C04 have the highest value of 30% because of the risks and difficulties involved in the machine operation, which require the personnel to move around in the production area, whereas C03 and C05 have the lowest 10% value because of the minimum risk related to machinery. | C02 and C04 have the highest value of 30% because of the usage of substrates and consumable materials in a working environment, while C03 and C05 have the lowest 10% value because of the nature of the job which does not consume high usage of substrates and materials. | C05 has the highest value of 40% because of the supervision activities, while other C01 and C04 have the lowest 10% value weightage due to the job requirements in operational. | C01 has the highest value of 40% because of the usage of IT in performing job activities, while other CUs have the same weightage due to the standard requirements of IT usage in printing activities. |