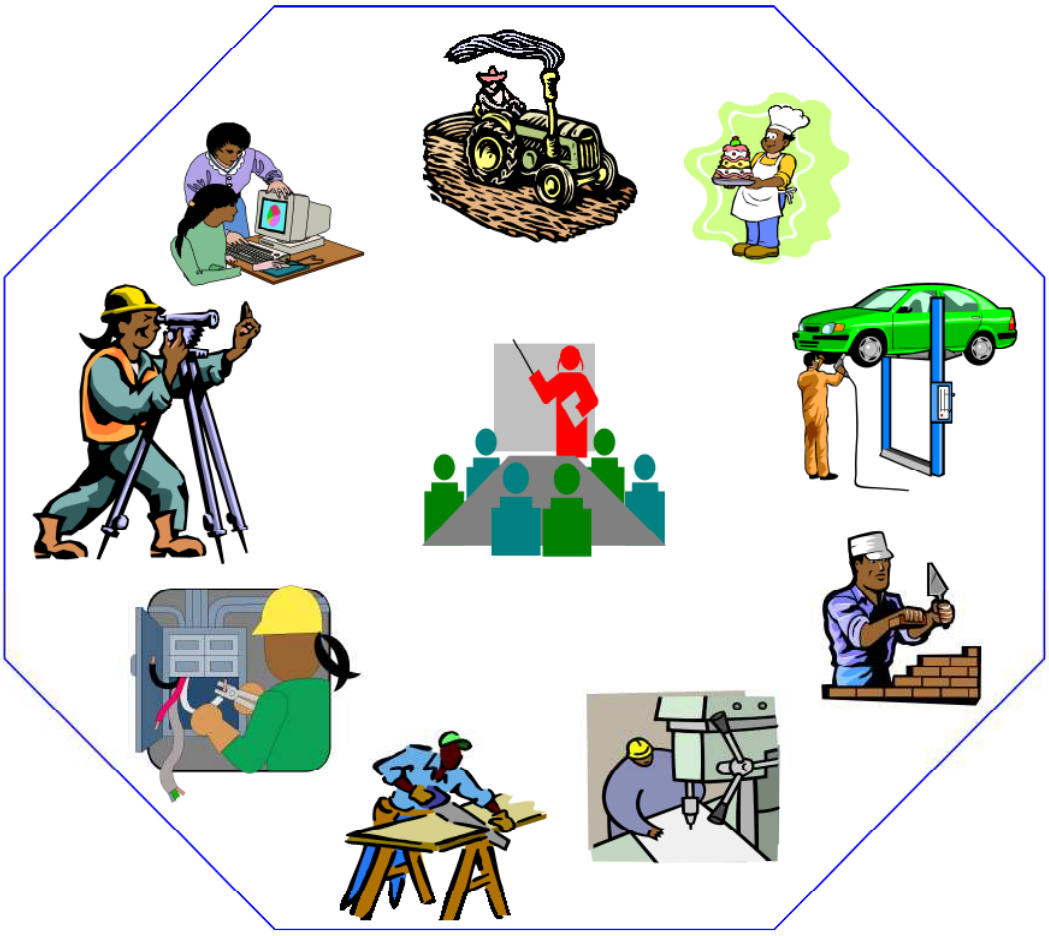
Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

PRINTING AND GRAPHIC ARTS SUPERVISION

NTQF Level IV



Ministry of Education

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Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopia Occupational Standards (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF). They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title and NTQF level
- Unit title
- Unit code
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the occupation with all the key components of a Unit of Competence:

- chart with an overview of all Units of Competence for the respective level including the Unit Codes and the Unit Titles
- contents of each Unit of Competence (competence standard)
- occupational map providing the Technical and Vocational Education and Training (TVET) providers with information and important requirements to consider when designing training programs for this standards and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Printing and Graphic Arts Supervision		
Occupational Code: IND PGS		
NTQF Level IV		
IND PGS4 01 0613 Set up and Produce Special Lithographic Printed Product	**IND PGS4 02 0613** Develop a Variable and Digital Data Template	**IND PGS4 03 0613** Implement Operational Plan
IND PGS4 04 0613 Coordinate Implementation of Customer Service Strategies	**IND PGS4 05 0613** Set up and Use Complex Color Management for Production	**IND PGS4 06 0613** Set up and Operate Automated Workflow
IND PGS4 07 0613 Produce Pad Printed Product	**IND PGS4 08 0613** Produce Complex Coated Product	**IND PGS4 09 0613** Troubleshoot and Optimize Materials and Machinery
IND PGS4 10 0613 Mistake Proof a Production Process	**IND PGS4 11 0613** Use On-Press Monitoring Of Print Quality (And Use On-Press Print Control Devices)	**IND PGS4 12 0613** Monitor Production Workflow
IND PGS4 13 0613 Supervise and Schedule Work of Others	**IND PGS4 14 0613** Apply Advanced Software Applications to Digital Production	**IND PGS4 15 0613** Set up for complex flexographic printing
IND PGS4 16 0613 Set up for Complex Gravure Printing	**IND PGS4 17 0613** Produce Specialist Flexographic Printed Product	**IND PGS4 18 0613** Produce Specialist Gravure Printed Product
IND PGS4 19 0613 Analyze Manual Handling Processes	**IND PGS4 20 0613** Operate a Card Printing Machine and Pack Product	**IND PGS4 21 0613** Plan and Organize Work
IND PGS4 22 0613 Migrate to new technology	**IND PGS4 23 0613** Establish quality standards	**IND PGS4 24 0613** Develop teams and individuals
IND PGS4 25 0613 Utilize specialized communication	**IND PGS4 26 0613** Manage and Maintain Small/Medium Business Operations	**IND PGS4 27 0613** Apply Problem Solving Techniques and Tools

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Set up and Produce Specialist Lithographic Printed Product**
Unit Code	**IND PGS4 01 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to produce specialized lithographic printed product that requires a certain amount of problem solving and experimentation with the substrate and press settings.

Element	Performance Criteria
1. Maintain specialised lithographic printing process	1.1. Lithographic plate and plate cylinder conditions are monitored, evaluated and adjusted to ensure the quality of the ***specialised*** printed product meets the standard of the sample sheet. 1.2. Lithographic blanket and blanket cylinder conditions are monitored, evaluated and adjusted to ensure the quality of the specialised printed product meets the standard of sample sheet. 1.3. Lithographic impression cylinder condition is monitored, evaluated and adjusted to ensure quality of the specialised printed product meets the standard of sample sheet. 1.4. Lithographic inking system is checked and maintained to ensure quality of the specialised printed product meets the standard of sample sheet. 1.5. Lithographic dampening system condition is monitored, evaluated and adjusted to ensure quality of the specialised printed product meets the standard of sample sheet. 1.6. Set off/marking prevention and drying system is monitored, evaluated and adjusted to ensure quality of the specialised printed product meets the standard of sample sheet. 1.7. Drying systems are monitored, evaluated and adjusted to ensure quality of the specialised printed product meets the standard of approved proof.
2. Maintain specialised production process	2.1. Production process is operated in association with fellow workers and according to enterprise procedures and planned daily schedule. 2.2. Production is maintained according to OHS requirements, manufacturer's specifications and enterprise procedures. 2.3. Manual and/or automatic control is used according to job specifications. 2.4. Performance is monitored, evaluated and verified using the process control system according to enterprise procedures. 2.5. ***Inks***/***coatings*** performance, colour, register and position of print are monitored, evaluated and adjusted throughout production run.

	2.6. Production difficulties are anticipated and preventive action is taken to prevent occurrence by timely intervention. 2.7. Process adjustments to eliminate problems are reported according to enterprise procedures. 2.8. Faulty performance of equipment is identified and reported according to enterprise procedures. 2.9. Waste is sorted according to enterprise procedures.
3. Tune and adjust machinery	3.1. Idiosyncrasies of ***machines*** are reviewed and adjustments or tuning undertaken to compensate or to exploit the idiosyncrasy, within manufacturer's specifications. 3.2. Options are assessed to determine most effective/efficient method of production, ensuring highest quality and yield from machinery. 3.3. A test run confirms correct ***colour matching systems*** options and settings or the need for further adjustment or tuning to meet quality standards. 3.4. ***Design*** Options and recommendations are documented for future reference according to enterprise procedures. 3.5. Instruction on new practices is provided to machine operator or finisher, if required.
4. Troubleshoot machinery and material problems	4.1. Corrective or preventive action is recommended and implemented where appropriate. 4.2. Changes are communicated to relevant personnel in a logical and easily understood manner. 4.3. Changes are monitored to confirm improvement to production efficiency. 4.4. Ongoing problems are reported according to enterprise procedures.
5. Conduct shutdown of production process	5.1. Correct shutdown sequence is followed according to manufacturer's specifications and enterprise procedures. 5.2. Plate cylinder is set up and adjusted according to job specifications. 5.3. Unused ink is correctly labelled and stored according to manufacturer/supplier specifications and enterprise procedures. 5.4. Solid and liquid waste is removed from operating area and recycled or disposed of, where required, according to regulatory requirements and enterprise procedures. 5.5. All product is removed from operating area. 5.6. Machine faults requiring repair are identified and reported to designated person according to enterprise procedures. 5.7. Repair/adjustment is verified prior to resumption of operations.

Variable	Range
Specialized	may include: • specialised within this context relates to the set up and production of print runs that involve new products, or a new mix of substrates and inks that requires a certain amount of problem solving and experimentation with the substrate and press settings. The set-up of equipment and production involves the development of new set up and production approaches based on solving technical problems arising from new product or equipment combinations.
Inks/coatings	may include: • Wide range of inks commonly used in printing.
Machines	may include: • Range of single sheet, stream-fed or reel-fed printing machines with manual, semi-automated, fully automated or computerised process control. Includes machines with digitally imaged plates.
Color matching systems	may include: • Use of densitometers and/or spectrophotometer.
Design	may include: • Complex graphics and text. Critical "tight" registration, fit and position, registration for quality print requirements.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • Operate a lithographic press ensuring an efficient specialised production flow that maintains product quality standards. Any production problems are anticipated and rectified with minimum downtime. The machine is correctly shut down and cleaned according to OHS guidelines • demonstrate use of computerised control, monitoring and data entry systems if available and appropriate • demonstrate an ability to find and use information relevant to the task from a variety of information sources • monitor production output and make necessary adjustments to maintain print quality on a lithographic machine whilst producing a specialised print on TWO occasions (if possible using different types and sizes of substrates) according to job specifications, enterprise procedures and the Performance Criteria • Evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity.
Underpinning Knowledge and Attitudes	• amount of movement that the sheet should have when being registered by the side lay • cause of miss-register of the sheet at the feeder • visible signs of the sheet • being registered in those concerns that are there when operating the reel transportation system • reel wander cause • cause of the web to break at the unwind unit

	• difference between a "flying paster" and "zero speed" type reel-stand • a print fault that would result from the reel being run out of centre • possible faults in the unwind section that could cause a web break • OHS concerns that are there when operating the sheet transportation system • result of worn suckers at the feeder suction head • sheet detection types that are on this machine feeder • gripper malfunction affect on the sheet control and transfer • adjustment of the sheet transfer mechanisms • cause of the feeder stack to become uneven • result of the feeder stack not being loaded level • rectifying the unevenness of the feeder stack • OHS risks that are associated with rewinding and sheeting • a safety feature that is in the delivery system if the web jams up • sheet cut-off wander • effect of poorly adjusted nip rollers when rewinding and sheeting • further operations that are required for printed reels upon removal from the printing machine • storing the printed job after removal from the printing machine • need to label each printed reel • effect that machine speed will have on sheet delivery • advantage of spraying moving sheets with anti set off powder in the delivery • items in the delivery that could cause marking of the printed image • remedial steps that may be necessary to eliminate marking of the printed image • function of a sheet decurler fitted to the delivery of some machines • faults that could result from incorrectly set grippers in the transfer section of a machine • storing the printed job after removal from the printing machine • result if the plate develops a crack at the grip edge during a print run • effect of a sticky blanket surface • print faults that would result from the blanket not being tensioned correctly • cause of blanket packing creep during printing • effect of a build-up of ink on the impression cylinder the printed product • cause of ink to lie back in the duct
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by providing feedback to internal and external clients about printing processes and job specifications • collecting, analysing and organising information by collating details of job and machine specifications and printing processes to ensure efficient production

	• planning and organising activities by providing information about time and materials requirements for production scheduling • teamwork when maintaining the production process in association with others • mathematical ideas and techniques by calculating consumables and personnel requirements to meet production schedules • problem-solving skills by identifying print problems and correcting during print run • use of technology by using monitoring systems, understanding their output and feeding into production management systems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Develop a Variable and Digital Data Template**
Unit Code	**IND PGS4 02 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to document content and structure for digital print equipment.

Element	Performance Criteria
1. Identify content requirements	1.1. ***Data purpose*** is identified from job requirements and clarified with client. 1.2. Data file format and type of database are identified. 1.3. Layout is determined from job requirements and confirmed with client. 1.4. Static and variable fields areas are identified according to job specifications. 1.5. Accuracy of data is confirmed and signed off as such by client. 1.6. The requirement for additional software integration is determined such as postal software.
2. Develop the template	2.1. Fields are created and named consistently to reduce errors. 2.2. Copy holes and data are ***marked-up*** to match the job specifications. 2.3. A report for the printer is developed which identifies the relevant data assigned to each copy hole according to job specifications and business rules. 2.4. Copy holes are assigned and related information documented for the printer to understand the connection to the data. 2.5. The correct number of fields is available for the job. 2.6. Template is signed off as suitable by client.
3. Finalise and test the template	3.1. Business rules are tested and if possible a soft proof is reviewed. 3.2. The final document is viewed with a mark-up language parser. 3.3. Spot colours are converted to process colours where necessary. 3.4. The template is well-formed, free of errors and meets the needs of the client. 3.5. The template is extensible to meet future client needs. 3.6. Template is finalised and made ready to send to the press.
4. Confirm data requirements	4.1. The ***job specifications*** are reviewed to identify document purpose. 4.2. Materials required for page design, layout and content are identified from job specifications. 4.3. Source and format of data is determined and confirmed. 4.4. The page design template is evaluated for printing purposes and static and ***variable fields*** are correctly understood and labelled.

	4.5. Responsibility for data accuracy and other tests such as spell checks and postal software is agreed with client.
5. Prepare data	5.1. Data required to populate the copy holes in the variable-data template is established. 5.2. The fields to be populated are confirmed and linked to data required to mark-up the copy holes in the variable-data template. 5.3. A composition engine is used to achieve the required data format and page layout requirements for merging variable data and static elements. 5.4. Business rules are developed to reduce data errors and discrepancies. 5.5. If possible, a sample of the data is obtained and preliminary checks run, making sure the data and format is correct. 5.6. A soft proof is performed to ensure the ***quality*** of all static and variable elements. 5.7. If high variability, ripped data is spooled prior to printing to maintain higher engine speeds. 5.8. A sample from the machine is produced and checked for conformance to the job specifications,

Variable	**Range**
Data purpose	may include: • Target audience, type of product.
Markup	may include: • PPML/VDX • XML.
Job specifications	may include: • Job sheets, batch processing orders, job specs.
Composition engine	may include: • DL Formatter, Autograph Series, DL Pager, Calligramme, DL Composer.
Variable fields	may include: • text • images • Layout with flexible placement.
Quality	may include: • Efficiency, quality and output rate.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • identify correct data requirements and developing and marking up the structure of a digital template for variable digital printing • demonstrate an ability to find and use information relevant to the task from a variety of information sources

	• a digital template for variable data printing that is error free in the soft proof • gather assessment of the unit of competency alone or through an integrated assessment activity.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • SGML relationship to XML and PPML • difference between SGML, PPML and XML and the use of SGML over XML • difference between Cascading Style Sheets (CSS) and XSL • intended purpose of XSL • purposes of meta data within mark-up language documents • PRISM importance for content publishing • personalized Print Markup Language relationship to XML • PPML/VDX, XML • privacy legislation • database operation • knowledge of data mining
Underpinning Skills	Demonstrates skills in: • use an extensible mark-up language over HTML • ways that you use both with the one set of data • standard Generalised Mark-up Language and why it is important • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by determining and confirming source and format of data in consultation with the client • collecting, analysing and organising information by evaluating the page design template and correctly labelling static and variable fields • planning and organising activities by confirming data requirements before developing business rules • teamwork when maintaining the production process in association with others • mathematical ideas and techniques by assessing the output rate of the printing equipment • problem-solving skills by developing a soft proof to ensure the quality of all static and variable elements • use of technology by using relevant hardware and software to prepare for variable digital printing
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Implement Operational Plan**
Unit Code	**IND PGS4 03 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to implement the operational plan by monitoring and adjusting operational performance, producing short term plans for the department/section, planning and acquiring resources and providing reports on performance as required.

Element	Performance Criteria
1. Implement operational plan	1.1. Collate, analyse and organise details of ***resource requirements*** in consultation with ***relevant personnel***, ***colleagues and specialist resource managers***. 1.2. Implement ***operational plans*** to contribute to the achievement of organisation's performance/business plan. 1.3. Identify and use ***Key Performance Indicators (KPLs)*** to monitor operational performance. 1.4. Undertake ***contingency planning*** and ***consultation processes***. 1.5. Provide assistance in the development and presentation of proposals for resource requirements in line with operational planning processes.
2. Implement resource acquisition	2.1. Recruit and induct employees within ***organisation's policies***, ***practices and procedures***. 2.2. Implement plans for acquisition of physical resources and services within organisation's policies, practices and procedures and in consultation with relevant personnel.
3. Monitor operational performance	3.1. Monitor ***performance systems and processes*** to assess progress in achieving profit/productivity plans and targets. 3.2. Analyse and use budget and actual financial information to monitor profit/productivity performance. 3.3. Identify unsatisfactory performance and take prompt action to rectify the situation according to organisational policies. 3.4. Provide mentoring, coaching and supervision to support individuals and teams to use resources effectively, economically and safely. 3.5. Present recommendations for variation to operational plans to the ***designated persons***/***groups*** and gain approval. 3.6. Implement ***systems***, ***procedures and records*** associated with performance in accordance with organisation's requirements.

Variable	Range
Resource requirements	may refer to: • goods and services to be purchased and ordered

	• human, physical and financial resources - both current and projected • stock requirements and requisitions
Relevant personnel, colleagues and specialist resource managers	may include: • colleagues and specialist resource managers • managers • occupational health and safety committees and other people with specialist responsibilities • other employees • people from a wide range of social, cultural and ethnic backgrounds, and people with a range of physical and mental abilities • supervisors
Operational plans	may refer to organisational plans, tactical plans developed by the department or section to detail product and service performance
Key performance indicators	may refer to measures for monitoring or evaluating the efficiency or effectiveness of a system, and which may be used to demonstrate accountability and to identify areas for improvements
Contingency planning	may refer to: • contracting out or outsourcing human resources and other functions or tasks • diversification of outcomes • finding cheaper or lower quality raw materials and consumables • increasing sales or production • recycling and re-use • rental, hire purchase or alternative means of procurement of required materials, equipment and stock • restructuring of organisation to reduce labour costs • risk identification, assessment and management processes • seeking further funding • strategies for reducing costs, wastage, stock or consumables • succession planning
Consultation processes	may refer to: • mechanisms used to provide feedback to the work team in relation to outcomes of consultation • meetings, interviews, brainstorming sessions, email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual operational plans
Organization's policies, practices and procedures	may include: • organisational culture • Standard Operating Procedures • organisational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources • undocumented practices in line with organisational operations
Performance systems and processes may refer to:	• informal systems used by frontline managers for the work team in the place of existing organisation-wide systems • formal processes within the organisation to measure performance, such as:

	➢ feedback arrangements ➢ individual and teamwork plans ➢ KPLs and specified work outcomes
Designated persons**/**groups	may include: • other affected work groups or teams and groups designated in workplace policies and procedures • those who have the authority to make decisions and/or recommendations about operations such as workplace supervisors, other managers
Systems**,** procedures and records	may include: • databases and other recording mechanisms for ensuring records are kept in accordance with organisational requirements • individual and team performance plans • organisational policies and procedures relative to performance

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • ability to monitor and adjust operational performance, produce short-term plans for the department or section, plan and acquire resources, and provide reports on performance as required • Knowledge of principles and techniques associated with monitoring and implementing operations and procedures.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • contingency planning • methods for monitoring and reporting on performance • monitoring and implementing operations and procedures • problem identification and methods of resolution • relevant budgeting and financial analysis, interpretation and reporting requirements • resource management systems at the tactical implementation level • resource planning and acquisition • Tactical risk analysis including identification and reporting requirements.
Underpinning Skills	Demonstrates skills in: • coaching and mentoring skills to provide support to colleagues • literacy skills to access and use workplace information, and to prepare reports • planning and organizing skills to monitor performance and to sequence work of self and others to achieve planned outcomes
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Coordinate Implementation of Customer Service Strategies**
Unit Code	**IND PGS4 04 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to advise on, carry out and evaluate customer service strategies, including the design of improvement strategies based on feedback. Operators may have responsibility to provide guidance or to delegate aspects of these tasks to others.

Element	Performance Criteria
1. Advise on customer service needs	1.1 Clarify and accurately assess ***customer needs*** using appropriate ***communication techniques***. 1.2 Diagnose problems matching service delivery to ***customers*** and develop options for improved service within ***organizational requirements***. 1.3 Provide relevant and constructive advice to promote the improvement of customer service delivery. 1.4 Use ***business technology*** and/or ***online services*** to structure and present information on customer service needs.
2. Support implementation of customer service strategies	2.1 Ensure customer service strategies and opportunities are promoted to ***designated individuals and groups***. 2.2 Identify and allocate available budget resources to fulfill customer service objectives. 2.3 Promptly action ***procedures to resolve customer difficulties*** and ***complaints*** within organizational requirements. 2.4 Ensure that decisions to implement ***strategies*** are taken in consultation with designated individuals and groups.
3. Evaluate and report on customer service	3.1 Review client satisfaction with service delivery using verifiable data in accordance with organizational requirements. 3.2 Identify and report changes necessary to maintain service standards to designated individuals and groups. 3.3 Prepare conclusions and recommendations from verifiable evidence and provide constructive advice on future directions of client service strategies. 3.4 Maintain systems, records and reporting procedures to compare changes in customer satisfaction.

Variable	Range
Customer needs	may relate to: • accuracy of information • advice or general information • complaints

	• fairness/politeness • further information • making an appointment • prices/value • purchasing organisation's products and services • returning organisation's products and services • Specific information.
Communication techniques	may include: • analysing customer satisfaction surveys • analysing quality assurance data • conducting interviews • consultation methods, techniques and protocols • making recommendations • obtaining management decisions • questioning • seeking feedback to confirm understanding • Summarising and paraphrasing.
Customers	may include: • corporate customers • individual members of the organisation • individual members of the public • internal or external • Other agencies.
Organizational requirements	may include: • access and equity principles and practice • anti-discrimination and related policy • confidentiality and security requirements • defined resource parameters • ethical standards • goals, objectives, plans, systems and processes • legal and organisational policies, guidelines and requirements • OHS policies, procedures and programs • payment and delivery options • pricing and discount policies • quality and continuous improvement processes and standards • quality assurance and/or procedures manuals • replacement and refund policy and procedures • Who is responsible for products or services?
Business technology	may include: • answering machine • binder • computer • fax machine • photocopier • printer • shredder • Telephone.

Online services	may include: • access to product database by customers online • access to purchase, delivery and account records • contact centre • online ordering • online payments • online registration • quick/reasonable response • Two-way communication online.
Designated individuals and groups	may include: • colleagues • committee • customers • external organisation • line management • Supervisor.
Procedures to resolve customer difficulties	may include: • external agencies (e.g. Ombudsman) • item replacement • referrals to supervisor • refund of monies • review of products or services • Using conflict management techniques.
complaints	may include: • administrative errors such as incorrect invoices or prices • customer satisfaction with service quality • damaged goods or goods not delivered • delivery errors • products not delivered on time • service errors • specific business problems and issues such as: ➢ difficulty accessing services ➢ inactive links ➢ not appreciating differing hardware and software ➢ services not available ➢ supply errors such as incorrect product delivered ➢ time taken to access services ➢ unfriendly website design ➢ website faults • Warehouse or store room errors such as incorrect product delivered.
strategies	may include: • courtesy/politeness • delivery times • merchandise characteristics • price offers • product/refund guarantees • Product/service availability.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • identifying needs and priorities of the organisation in delivering services to customers • responding to and reporting on customer feedback • designing strategies to improve delivery of products and services • Knowledge of the principles of customer service.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as: ➢ anti-discrimination legislation ➢ ethical principles ➢ codes of practice ➢ privacy laws ➢ environmental issues ➢ Occupational Health and Safety (OHS) • principles of customer service • organisational business structure, products and services • Product and service standards and best practice models.
Underpinning Skills	Demonstrates skills in: • communication skills to ➢ communicate effectively with personnel and clients at all levels ➢ articulate customer service strategies • interpersonal skills to: ➢ build relationships with customers ➢ establish rapport • literacy skills to: ➢ prepare general information and papers ➢ read a variety of texts ➢ write formal and informal letters according to target audience • planning skills to develop implementation schedules • problem solving skills to diagnose organisational problems relating to customer services • self management skills to: ➢ comply with policies and procedures ➢ consistently evaluate and monitor own performance ➢ Seek learning opportunities.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Set up and Use Complex Color Management for Production**
Unit Code	**IND PGS4 05 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to create profiles and finger-print presses to obtain the best match across color devices.

Element	Performance Criteria
1. Finger-print press	1.1. Suitable ***test charts*** are selected or produced. 1.2. ***Press*** is optimised to ***workplace standard***, in collaboration with the press operator. 1.3. Test chart is printed with standard ink densities on any one of a range of stocks.
2. Measure press test charts	2.1. ***Colour measurement devices*** are calibrated and used to measure printed test charts. 2.2. Multiple charts are measured and results recorded. 2.3. ***Software*** is used to average multiple measurements.
3. Create and use custom press profiles	3.1. Appropriate reference file is selected to match the printed chart. 3.2. Profiling software is used to create an output press profile from the averaged measurement file and profile is tested and edited if required. 3.3. Profile is inserted into the ***colour workflow***.
4. Create and use digital device profiles	4.1. Suitable test charts are selected. 4.2. The device is calibrated and the test chart is output or digitised. 4.3. The test chart is measured using a colour measurement device. 4.4. An appropriate reference file is selected to match the test chart. 4.5. Software is used to create a profile. 4.6. The device profile is inserted into the colour workflow.
5. Maintain custom colour management workflow	5.1. Printing conditions are monitored and recorded to ensure adherence to workplace standard. 5.2. ***Digital devices*** are regularly calibrated.

Variable	Range
Test charts	may include: • IT8 • European Colour Initiative (ECI) • printing Test Charts (TC) • Proprietary or custom made charts.

Press	may include: • offset • web • flexography • Digital.
Workplace standards	• may include: • International ISO printing standards or internal workplace standards.
Color measurement devices	• may include: • densitometers or spectrophotometers, including strip reader style devices, such as: • Greta • Macbeth • X write.
Software	• may include: • a range of industry colour applications including: • color management software, e.g. Color sync • profile creating software • scanner profiling software, e.g. Collarbone Pro and Scan Open • Densitometry and spectrophotometer software.
Color workflow	• may include: • software applications, e.g. In Design and Photoshop • printer • monitors • proofers • Raster Image Processors (RIPs) • computer to plate CTP systems • scanners • digital cameras • digital presses and wide format printers.
Digital devices	may include input, output and display devices, such as: • monitors • printers, proofers and wide format • Scanners and digital cameras.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • create custom device profiles in a digital production workflow to enhance the match across proofs, monitors and final products • find and use information relevant to the task from a variety of information sources • create three custom device profiles that have been used within a colour workflow • produce a final printed product from the color workflow
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • OHS issues to be considered when managing colour for digital production • importance of bringing a device into a known state

	• how often to calibrate devices • what change of condition would result in the need for re-calibration • colour measurement devices and usage • types of proprietary software used for colour measurement • comparison of test charts, their advantages and disadvantages • process of determining grey balance and white points • colour profiles and their use • effect colour profiles have on output • difference between input, output and display profiles • colour management systems • components of a colour management system • components of a colour-managed workflow • Red, Green Blue (RGB) versus Cyan, Magenta, Yellow, Black (CMYK) versus mixed colour workflows • how to implement colour management on a system • workplace and international printing standards • effects different substrates have on colour reproduction for proofing and final production • how dot gain effects colour • Under Color Removal (UCR) and Grey Component Replacement (GCR)
Underpinning Skills	Demonstrates skills in: • Occupational Health and Safety (OHS) skills for using correct ergonomics when operating the computer • communication skills needed to communicate ideas and information by printing a test chart on a press • planning, analysing and organising skills to determine printing conditions and colour management requirements before generating a proof • teamwork skills for maintaining the production process in association with others and working independently with responsibility for others • numeracy skills used in relation to densitometry, spectrophotometer and colour profiles • problem-solving skills used in diagnosing and correcting colour problems • technical skills needed for utilizing software and hardware correctly when creating a profile
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Set up and Operate Automated Workflow**
Unit Code	**IND PGS4 06 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to set up and operate an automated workflow to produce a print ready file.

Element	Performance Criteria
1. Check job files and perform pre-flight	1.1. All details required for the job are checked and confirmed against job specifications. 1.2. Files are loaded and all ***file resources*** are checked to determine if file is ready for production. 1.3. ***File format*** is identified and best method of submission is chosen. 1.4. Missing fonts are, where available, embedded and image data optimised, cropped and/or compressed if necessary. 1.5. Hairlines are thickened to a minimum width, if necessary. 1.6. Layout images are assigned as high resolution data and down sampled. 1.7. Thumbnails are generated for viewing pages.
2. Create portable job ticket format processors	2.1. Parameters for individual elements or steps for all phases of the job are defined. 2.2. All phases of the job are sequenced according to the workflow and enterprise processes. 2.3. If necessary access levels are set for operators. 2.4. The workflow definition is reviewed and saved.
3. Transform colours	3.1. Assigned colour libraries are checked for consistency and colour names are converted if inconsistency is present. 3.2. Spot colours are converted to process colours where necessary. 3.3. Output colours are matched to colours input using selected ICC profile. 3.4. Colours are set for the final proof output.
4. Set trapping parameters	4.1. The portable job ticket format trapping settings are used and additional trapping requirements are added where appropriate. 4.2. Traps are viewed and checked in the file. 4.3. If necessary traps are edited, removed or replaced. 4.4. An appropriate ***separation-capable proof*** is viewed to ensure that the ***separations*** will output as expected.
5. Proof pages	5.1. An imposition plan is assigned to the job.

	5.2. A form proof from the plotter is printed containing all printer marks and signature marks are viewed for final checking. 5.3. Pages are outputted on a page proofer and checked. 5.4. Any required changes are made and proof is approved by client.
6. Prepare for output	6.1. Jobs to be imaged are outputted to film or plate. 6.2. CIP3/CIP4 data is captured and dealt with according to enterprise procedures. 6.3. Information for the presetting of cutting and folding machines is generated if required and plug-ins are available. 6.4. The Print Production Format files are exported to or saved for the print console and outputted for plate or film imaging. 6.5. Job data is saved and archived as required. 6.6. Documentation is signed off according to enterprise procedures.

Variable	**Range**
File resources	may include: • fonts • High-resolution images.
File format	may include: • PP • EPS • PDF • PS • TIFF • JPEG.
Separation-capable proof	may include: • Should meet client requirements and enterprise and industry standards.
Separations	may include: • VPS • Spectrum • Inside or Prinergy's Separation Viewer plug-in for Adobe Acrobat.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • setting up and operating an automated workflow to produce a print ready file • demonstrate an ability to find and use information relevant to the task from a variety of information sources • set up and operate an automated workflow to produce TWO different print ready files • Evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity.

Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • pre-flighting • hairline effects • importance of the colour space • trapping
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by exporting or saving print production format files • collecting, analysing and organising information by loading files and checking file resources to determine production status • planning and organising activities by proofing pages prior to preparing for output • teamwork when maintaining the production process in association with others • mathematical ideas and techniques by generating thumbnails for viewing pages • problem-solving skills by checking assigned colour libraries and converting inconsistent colour names • use of technology by creating portable job ticket format processors
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Produce Pad Printed Product**
Unit Code	**IND PGS4 07 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to produce specialized pad printed product that requires a certain amount of problem solving and experimentation with the substrate and press settings.

Element	Performance Criteria
1. Maintain specialised pad printing process	1.1. Location of objects into fixtures is monitored, evaluated and adjusted if necessary. 1.2. Printing plates condition is monitored and evaluated to ensure the quality of printed product meets the standard of the approved proof. 1.3. Printing pads condition is monitored, evaluated and maintained to ensure the quality of printed product meets the standard of approved proof. 1.4. Spatulas and doctor blades are monitored, evaluated and adjusted to ensure quality of printed product meets the standard of approved proof OR 1.5. ***Ink /coatings*** cups are monitored, evaluated and adjusted to ensure quality of printed product meets the standard of approved proof. 1.6. Printing ink viscosity is monitored, evaluated and adjusted to ensure quality of printed product meets the standard of approved proof.
2. Maintain in-line systems	2.1. In-line loading is monitored, evaluated and adjusted to ensure quality of printed product meets the standard of approved proof. 2.2. In-line pre-treatment is monitored, evaluated and adjusted to ensure quality of printed product meets the standard of approved proof. 2.3. In-line drying is monitored, evaluated and adjusted to ensure quality of printed product meets the standard of approved proof.
3. Maintain production process	3.1. Production process is operated in association with fellow workers and according to enterprise procedures and planned daily schedule. 3.2. Production is maintained according to OHS requirements, manufacturer's specifications and enterprise procedures. 3.3. Manual and/or automatic control is used as required according to job specifications. 3.4. Performance is monitored and verified using the process control system according to enterprise procedures. 3.5. Ink performance, ***colour matching systems***, register and position of print are monitored and adjusted throughout production run. 3.6. Production difficulties are anticipated and preventive action is taken to prevent occurrence by timely intervention.

	3.7. Process adjustments to eliminate problems are reported according to enterprise procedures. 3.8. Waste is sorted according to enterprise procedures.
4. Tune and adjust machinery	4.1. Idiosyncrasies of ***machines*** are reviewed and adjustments or tuning undertaken to compensate or to exploit the idiosyncrasy, within manufacturer's specifications. 4.2. Options are assessed to determine most effective/efficient method of production, ensuring highest quality and yield from machinery. 4.3. A test run confirms correct options and settings or the need for further adjustment or tuning to meet quality standards. 4.4. Options and recommendations are documented for future reference according to enterprise procedures. 4.5. Instruction on new practices is provided to machine operator or finisher, if required.
5. Troubleshoot machinery and material problems	5.1. Corrective or preventive action is recommended and implemented where appropriate. 5.2. Changes are communicated to relevant personnel in a logical and easily understood manner. 5.3. Changes are monitored to confirm improvement to production efficiency. 5.4. Ongoing problems are reported according to enterprise procedures.
6. Conduct shutdown of production process	6.1. Correct shutdown sequence is followed according to manufacturer's specifications and enterprise procedures. 6.2. Shutdown is conducted in association with fellow workers and in compliance with OHS requirements. 6.3. Unused ink is correctly labelled and stored according to manufacturer's/supplier's specifications and enterprise procedures. 6.4. Solid and liquid waste is removed from operating area and recycled or disposed of, where required, according to regulatory requirements and enterprise procedures. 6.5. All product is removed from operating area. 6.6. Machine faults requiring repair are identified and reported, according to enterprise procedures. 6.7. Repair/adjustment is verified prior to resumption of operations.

Variable	**Range**
Inks**/**coatings	may include: • Range of standard inks commonly used in multicoloured printing.
Color matching systems	may include: • Use of visual colour assessment to match basic standard colours and/or Pantone shades under controlled lighting conditions.

Machines	may include: • A range of pad printing machines with manual, semi-automated, fully automated or computerised operation.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • Operate a pad printing machine ensuring an efficient specialised production flow that maintains product quality standards. Any production problems are rectified with minimum downtime. The machine is correctly shut down and cleaned according to OHS guidelines • demonstrate use of computerised control, monitoring and data entry systems if available and appropriate • demonstrate an ability to find and use information relevant to the task from a variety of information sources • produce TWO complex pad printing jobs (if possible on different substrates) according to job specifications, enterprise procedures and the Performance Criteria • evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • major OHS concerns when operating this machine • MSDSs that are stored and the information do they contain • improvement of the colour density of a light image on a dark substrate by selection of a different machine cycle mode • selection of the appropriate machine cycle mode to provide the highest production output for a particular product • special cycle modes that are available on your machine and their application • determining that the ink has been mixed to the correct viscosity • correcting ink viscosity during production • causes of unreleased ink remaining on the printing pad and how do you identify them • effect of adding a catalyst on the pot life of ink and other factors that affect pot life • recognising a damaged pad • correct method of cleaning a pad during production • effect of different pad shapes for different colours In multicoloured printing • determining the time the ink should take to cure before scratch and adhesion tests can be performed • method that can be used to check for correct pre-treatment of polypropylene during production • ensuring the correct drying conditions for the product • effects that will be visible in the image if the ink viscosity is incorrect • identifying the cause of incorrect registration and preventing its recurrence

	• cause of a fine coating of ink over the whole cliché surface • machine manuals, safety and other documentation that are relevant to this task and where they are kept and information that is included in these documents
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by providing feedback to internal and external clients about printing processes and job specifications • collecting, analysing and organising information by identifying and recording specialised production practices • planning and organising activities by adjusting the production process to achieve specialised printing requirements • teamwork when communicating with work team members and workers involved in prior and subsequent processes to ensure efficient production • mathematical ideas and techniques by calculating consumables and personnel requirements to meet production schedules • problem-solving skills by adjusting machinery settings to determine the required tolerances to meet specialised requirements • use of technology by using machinery to produce specialized pad printed product
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Produce Complex Coated Product**
Unit Code	**IND PGS4 08 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to produce complex coated product.

Element	Performance Criteria
1. Maintain operation of reel system (OR Element)	1.1. Reel stand and rewind section are is monitored and adjusted to maintain correct tension and to ensure no marks or blemishes to finished product and to ensure efficient continuous operation. 1.2. Web control system is monitored and adjusted to ensure correct tension and accurate continuous positioning of the web for efficient operation. 1.3. ***Substrate handling*** is added to and removed from process according to job instructions. 1.4. Sheeting section is monitored and adjusted to ensure quality and efficient product delivery.
2. Maintain operation of sheet system (OR Element)	2.1. Feeder and delivery is monitored and adjusted to ensure continuous and efficient feeding to ***machine***. 2.2. Sheet pick-up and transport system is monitored and adjusted to ensure accurate and continuous sheet handling and efficient operation. 2.3. Transfer and control systems are monitored and adjusted to ensure correct and continuous sheet handling and efficient operation. 2.4. Substrate is added to and removed from process according to job instructions.
3. Maintain coating process	3.1. Roller condition is monitored and adjusted to ensure the quality of printed product meets the standard of approved proof. 3.2. ***Coating*** system and doctor blade condition (if appropriate) are monitored and adjusted to ensure quality of product meets the standard of approved proof. 3.3. Drying systems are monitored and adjusted to ensure quality of product meets the standard of approved proof. 3.4. Quality and viscosity of varnish coatings are monitored and adjusted as necessary to ensure quality of product.
4. Maintain production process	4.1. Basic or complex ***in-line processes*** printing/converting/ binding/finishing processes are monitored and adjusted to ensure quality of product meets the standard of the approved proof. 4.2. Production process is operated in association with fellow workers and according to company specifications and planned daily schedule.

	4.3. Production is maintained within OHS requirements and company and manufacturer's specifications. 4.4. Manual and/or automatic control is used as per specification. 4.5. Performance is monitored and verified using the process control system according to enterprise procedures. 4.6. Coating performance, register and position of coating are monitored and adjusted throughout production run. 4.7. Production difficulties are anticipated and preventive action is taken to prevent occurrence by timely intervention. 4.8. Process adjustments are reported to eliminate problems according to enterprise procedures. 4.9. Waste is sorted according to enterprise procedures.
5. Identify and rectify problems	5.1. Faulty performance of equipment is identified and reported according to enterprise procedures. 5.2. Problems in coating machine are identified and reported according to enterprise procedures. 5.3. Adjustments or corrections are carried out according to specified procedures and consistent with operator's skill level. 5.4. Coating machine operation is checked to ensure correct operation.
6. Conduct shutdown of production process	6.1. Correct shutdown sequence is followed according to manufacturer's specifications and enterprise procedures. 6.2. Shutdown is conducted in association with fellow workers and in compliance with OHS requirements. 6.3. Solid and liquid waste is removed from operating area and recycled or disposed of, where required, according to regulatory requirements and enterprise procedures. 6.4. All products are removed from operating area. 6.5. Machine faults requiring repair are identified and reported to designated person according to enterprise procedures. 6.6. Repair/adjustment is verified prior to resumption of operations.
7. Clean and wash up coating machine at end of print run	7.1. Cylinders, plate and roller surfaces are cleaned ready for next run. 7.2. Coating delivery system is washed up ready for next run, and liquid waste is disposed of according to company and regulatory requirements. 7.3. In-line slitting units are cleaned ready for next run. 7.4. Reef feed, transportation and delivery systems are disengaged and cleaned ready for next run. 7.5. Production records or other documentation are accurately completed where required by enterprise procedures.

Variable	Range
Substrate handling	may include: • Narrow or wide reel handling, and small and large sheet systems. • Full range of substrates within the major categories of paper, pressure sensitive material, board, plastics and related films, or metal
Machines	may include a range of dedicated coating and printing machines with manual, semi-automated, fully automated or computerised process control.
Coatings	may include a range of carbon, carbonless, latex, wax, resin and metallic coatings, aqueous and UV varnishes and machine varnishes.
In-line processes	may include minor processes that are integral to this competency can include basic in-line operations such as perforating, numbering, date coding, slitting that do not in themselves constitute another defined unit of competency. Where a major in-line process is defined as a separate competency (e.g. flat-bed cutting, folding) it should be assessed as such.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • Produce a complex coated product on either a reel- or sheet-fed machine ensuring an efficient production flow that maintains product quality standards. Any production problems are anticipated and rectified with minimum downtime. The machine is correctly shut down and cleaned according to OHS guidelines • demonstrate use of computerised control, monitoring and data entry systems if available and appropriate • demonstrate an ability to find and use information relevant to the task from a variety of information sources • produce THREE complex coating jobs (one spot coating, one overall coating and one fine detail, using THREE different coatings one of which must be metallic and if possible including at least ONE in-line process) according to job specifications, enterprise procedures and the Performance Criteria • gather assessment of the unit of competency alone or through an integrated assessment activity.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • action if vital information were missing from the job ticket • checks that should be undertaken prior to set up (availability of materials etc.) • major OHS concerns when setting up the sheet or reel transportation system • effect of fanning the sheets before loading into the press • setting and checking the double sheet detector during the print run • effect on the print of excessive tension on the rewinding reel • effect if the web is not spliced correctly • precautions that should be taken to ensure that the rewound product is of consistent acceptable quality • if sheeted, components that can be adjusted to ensure correct delivery

	• identifying printed material that is not of an acceptable standard • major OHS concerns when coating • action that could be taken if the aqueous coating was smudging on the delivery section of the machine • effects anti set off spray could have on the finished job • level the coating should be maintained in the pan • effect the UV lamp has on the UV coating • varying the temperature and volume of hot and cold air knives • use of IR radiation (including choice of medium or short wave lamps) and its effect when using coatings • dangers that exist from solvents and solutions used to clean the coating system, plates, cylinders and the press • parts of the machine that should be thoroughly cleaned following the coating of the job • components that are to be inspected for wear following the print run • records that are important for following or repeat prints • machine manuals, safety and other documentation that are relevant to this task and where they are kept and information that is included in these documents
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by providing feedback to internal and external clients about printing, in-line processes and job specifications • collecting, analysing and organising information by collating details of job and machine specifications and coating processes to ensure efficient production • planning and organising activities by coordinating sequences for coating and wash-up • teamwork when communicating with work team members and workers involved in prior and subsequent processes to ensure efficient production • mathematical ideas and techniques by calculating consumables and personnel requirements to meet production schedules • problem-solving skills by identifying coating problems and correcting during print run • use of technology by using monitoring systems, understanding their output and feeding into production management systems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Troubleshoot and Optimize Materials and Machinery**
Unit Code	**IND PGS4 09 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to extend the use of materials and adjust and tune machinery to meet efficiency targets.

Element	Performance Criteria
1. Review material behaviour	1.1. Evaluation of material or product structure is conducted to identify options for production. 1.2. ***Material handling options*** are chosen to ensure best performance of materials during production. 1.3. Options are assessed to determine most effective/efficient method of production, ensuring highest quality and yield from the materials. 1.4. A test runs confirms correct options or the need for further adjustment or trialling to meet quality standards. 1.5. Options and recommendations are documented for future reference according to enterprise procedures.
2. Tune and adjust machinery	2.1. Idiosyncrasies of machines are reviewed and adjustments or tuning undertaken to compensate or to exploit the idiosyncrasy, within the manufacturer's specifications. 2.2. Options are assessed to determine most effective/efficient method of production, ensuring highest quality and yield from machinery. 2.3. A test runs confirms correct options and settings or the need for further adjustment or tuning to meet quality standards. 2.4. Options and recommendations are documented for future reference according to enterprise procedures. 2.5. Instruction is provided to machine operator or finisher on new practices, if required.
3. Troubleshoot machinery and material problems	3.1. Corrective or preventive action is recommended and implemented where appropriate. 3.2. Changes are communicated to relevant personnel in a logical and easily understood manner. 3.3. Changes are monitored to confirm improvement to production efficiency. 3.4. Ongoing problems are reported according to enterprise procedures.

Variable	Range
Material handling options	may include: • fanning • stacking • drying

	• moisture • quantities • mixers • Glues.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • recommend and implement new practices that extend the everyday use of materials and machinery and troubleshoot problems material and machinery • Produce a portfolio that demonstrates that each element has been carried out. This should include records of standards and monitoring procedures and evidence that they are being effectively carried out • production efficiencies are confirmed through discussions with senior management and review of workplace documentation • gather from assessment of the unit of competency alone or through an integrated assessment activity
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • need for implementing change • changes to existing production areas that will have to be made • integrating the operation into existing organisational processes • materials that are required in addition to existing ones • alternatives to the chosen process • process choice • review that was conducted to assess the process to suit customer requirements • different materials used to produce the same results without the production problems • production plan information that will aid in determining the process • impact of the process on existing operations • integrating training into existing process operations • eliminate existing production problems • optimising existing machinery or equipment • special provisions that will be necessary to extend the use of equipment • expected production life of this equipment and machinery • technology that could see this equipment outdated • technology that could improve this equipment or machinery
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by communicating changes to relevant personnel in a logical and easily understood manner • collecting, analysing and organising information by documenting options and recommendations for future reference according to enterprise procedures • planning and organising activities by assessing options to determine the most effective/efficient method of production

	• teamwork when providing instructions to machine operator or finisher on new practices • mathematical ideas and techniques by conducting test runs to confirm correct options and settings • problem-solving skills by evaluating material or product structure to identify options for production • use of technology by working with relevant equipment and machinery
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Mistake Proof a Production Process**
Unit Code	**IND PGS4 10 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to focus on preventing errors/backsliding to a previous behavior.

Element	Performance Criteria
1. Analyse the process	1.1. Identify sources of variability/non-conformance in the process. 1.2. Identify critical control points in the process. 1.3. Analyse causes of variability/non-conformance.
2. Develop preventive techniques/systems	2.1. Liaise with team members and other people to develop mistake proof method of performing operation. 2.2. Test and validate ***mistake proofing***.
3. Implement permanent fix	3.1. Liaise with relevant people to have systems/***procedures*** changed to implement solution. 3.2. Liaise with relevant people to implement the solution. 3.3. Liaise with relevant people to ensure the workforce has an appropriate skills set. 3.4. Follow through to ensure implementation occurs.
4. Monitor implementation	4.1. Critically observe the implementation. 4.2. Compare the results of the implementation against the expected outcomes. 4.3. Modify solution to improve outcomes. 4.4. Ensure procedures reflect change. 4.5. Ensure training and assessment reflect change. 4.6. Audit change at agreed period/cycle. 4.7. Take action on any observed deviation.
5. Seek improvements	5.1. Observe changes against enterprise expectations for production. 5.2. Analyse process against enterprise expectations for production.

Variable	Range
Mistake proofing	may include: • sometimes known as baka-yoke/poka-yoke - a manufacturing technique of preventing mistakes by designing the manufacturing process, equipment, tools and components/subassemblies so that an operation literally cannot be performed incorrectly; an attempt to perform incorrectly, as well as being prevented, is usually met with a warning signal of some sort.

Procedures may include:	• procedures includes all work instructions, standard operating procedures, formulas/recipes, batch sheets, temporary instructions and similar instructions provided for the smooth running of the plant. They may be written, oral, computer-based or in some other form • for the purposes of this Training Package, procedures also includes good operating practice as may be defined by industry codes of practice (e.g. Good Manufacturing Practice (GMP), Responsible Care) and government regulations.

Evidence Guide	
Critical Aspects of Competence	• The competent team leader will be able to analyse their process and implement systems to ensure the process is mistake proof and the operators work in a predictable way with little or no chance of mistake. Evidence of actions taken to mistake proof the process should be available • One complex project on standardization of a process or several simpler projects will be needed to gain sufficient evidence.
Underpinning Knowledge and Attitudes	• communication ability to discuss items with both operators and technical support personnel • problem solving • analysis • teamwork • design conceptualisation • understanding of their process • factors in the process which may cause variability • methods of controlling the variability in the process • mistake proofing methods relevant to the process/product
Underpinning Skills	• OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by liaising with relevant people to have systems/procedures changed to implement solution • collecting, analysing and organising information by liaising with team members and other people to develop mistake proof method of performing operation • planning and organising activities by implementing a permanent fix • teamwork when liaising with team members and other people to develop mistake proof method of performing operation • mathematical ideas and techniques by implementing a permanent fix • problem-solving skills by modifying solution to improve outcomes • use of technology by seeking improvements
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Use On-press Monitoring of Print Quality(and Use On-press Print Control Devices)**
Unit Code	**IND PGS4 11 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to use computerized print quality monitoring devices and on-press print control devices.

Element	Performance Criteria
1. Set up print control devices	1.1. CIP3/CIP4 data, or equivalent, is used to create a profile. 1.2. Job is made ready to achieve position, register and fit to the ***specified standards***. 1.3. Colour is made ready to match appropriate colour standards. 1.4. Data is interpreted and appropriate adjustments made to gain approval to run ***presses***. 1.5. Data is pre-set and options/parameters selected according to the next job specifications. 1.6. Data is released to press according to manufacturer's recommended procedure. 1.7. Accurate position and fit are attained. 1.8. Approximate colour, density and ink/water balance if applicable are attained. 1.9. Make ready sheets are scanned or corrections are inputted until the print matches the proof or the client's requirements. 1.10. Client or supervisor's approval is obtained prior to running the job.
2. Maintain print quality throughout the run	2.1. Print is inspected visually to meet specified standards during run. 2.2. Data is analysed against the required standards. 2.3. Appropriate adjustments are made to maintain consistency throughout run. 2.4. At regular intervals ***monitor systems*** and maintain job to ensure ***quality standards***.
3. Maintain equipment	3.1. Maintenance tasks are performed according to the operator's manual. 3.2. Equipment is calibrated according to the operator's manual.

Variable	Range
Specified standards	may include: • May be defined by enterprise/operator or default tolerances, client requirements, colour tolerances, industry standards.

Presses	may include: • Press must be aligned to recognised colour standard.
Monitoring systems	may include: • Built-in or add-on or stand-alone systems including: image control. Electronic colour management e.g. densitometry, colour imagery, Komori system, spectrophotometer.
Quality standards	may include: • CIP3 and CIP4

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • may be defined by enterprise/operator or default tolerances, client requirements, colour tolerances, industry standards • demonstrate an ability to find and use information relevant to the task from a variety of information sources • set up and align monitoring device to appropriate standards on THREE occasions • produce profiles of samples taken during THREE different print runs that show print production is within agreed tolerances, if possible using different variables • evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity
Underpinning Knowledge and Attitudes	Demonstrates knowledge of - • colour theory of additive colours (light), RGB • colour theory of subtractive colours (pigments), CMYK • relationship between ranges of visual colour RGB and CMYK • ICC profiling • underlying principle of densitometry • underlying principle of spectrophotometer • basic underlying principles for determining tolerance in densitometry and spectrophotometer • an original colour control bar determinates • determining the accuracy of the elements in a colour bar • ensuring consistent print quality output • recognising colour contamination • setting alarm limits for colour contamination • accessing data • determine that data is appropriate • sample to ensure consistency • processes that you would put in place if sample varies from standard • ways quality can vary and how they can be fixed • computerised functions, common faults and electronic registration systems • information that you need from pre-press to ensure quality product • information that you need to give to pre-press to ensure quality product

	• meaning of the terms registration, fit, position and alignment • importance of registration marks
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by communicating specifications for colour profiles and pre-press requirements for printing to clients • collecting, analysing and organising information by collating and integrating information on colour profiles and press performance • planning and organising activities by establishing sequence of monitoring to ensure quality output • teamwork when integrating job planning with pre-press • mathematical ideas and techniques by understanding and applying colour profiles and curves to machine adjustment • problem-solving skills by monitoring samples and adjusting equipment as necessary • use of technology by efficiently using monitoring systems to ensure quality output
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Monitor Production Workflow**
Unit Code	**IND PGS4 12 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to monitor the workflow, assess job steps and evaluates work progress.

Element	Performance Criteria
1. Input job	1.1. Each new job is assigned a unique identification number. 1.2. Baselines are set for the production and budget estimation. 1.3. The number of actions or steps are identified for each job. 1.4. The ***nature of the actions*** are identified.
2. Assess job step	2.1. The job step is identified using business workflow tools. 2.2. The current step is compared against any baselines set for the job. 2.3. The number of steps and iterations are identified and any corrective action undertaken if necessary. 2.4. Actions within each step are logical to the step. 2.5. Resources required for the current and future steps are identified and availability confirmed.
3. Evaluate job progress	3.1. Job progress is evaluated and any improvement modifications to the workflow are identified. 3.2. Parallel activities have been fully utilised to meet baselines and quality standards. 3.3. Reports are reviewed and possible process improvements identified.

Variable	Range
Nature of the actions	may include: • Ordering, coordinating, modifying.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • correctly monitoring the workflow, assessing job steps and evaluating work progress • for valid and reliable assessment of this unit, evidence should be gathered over a period of time through a range of methods for assessment to indicate consistent performance • evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • setting baselines • business/production workflows

	• process improvement • job assessment • scheduling • resource allocation
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by setting baselines for the production and budget estimation • collecting, analysing and organising information by reviewing reports and identifying possible process improvements • planning and organising activities by identifying resources required for the current and future steps and confirming availability • teamwork when maintaining the production process in association with others • mathematical ideas and techniques by assigning each new job a unique identification number • problem-solving skills by evaluating job progress and identifying any improvement modifications to the workflow • use of technology by using equipment to monitor workflow, assess job steps and evaluate work progress
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Supervise and Schedule Work of Others**
Unit Code	**IND PGS4 13 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to supervise and schedule the work of a team or individuals.

Element	Performance Criteria
1. Plan and implement work schedules	1.1. Tasks and/or jobs are identified and prioritised according to the overall production schedule. 1.2. Timelines, personnel and equipment are identified for each job and task. 1.3. Schedules are communicated logically and in an easily understood manner. 1.4. Changes to schedules are implemented through reorganisation of priorities, with reasons being clearly conveyed to the team or individuals. 1.5. Priority of tasks is communicated to the team or individuals.
2. Monitor performance of tasks	2.1. Required standard is effectively communicated to the team or individuals to ensure understanding of the allotted task. 2.2. Instruction or support to achieve required standard is provided as necessary. 2.3. Standard of performance is monitored, including quality standards, to ensure achievement of outcomes and is reported according to enterprise procedures. 2.4. Completion times of tasks/jobs are monitored and scheduling is adjusted as appropriate.
3. Monitor and support development of teams or individuals	3.1. Individual team or worker performance is monitored to determine effectiveness and is reported according to enterprise procedures. 3.2. Support is provided to individuals or teams to ensure full participation. 3.3. Procedures are provided to assist interaction and feedback on effectiveness between teams and individuals.
4. Monitor the application of OHS in the work area	4.1. Implementation of standards, both OHS and environmental, is monitored to determine safety in the work area requirements. 4.2. Strategies for prevention or correction of problems are determined from the monitoring process. 4.3. Recommendations for prevention or correction are made in order to achieve established standards.
5. Communicate with management, work teams and individuals	5.1. All information affecting work is explained logically and in an easily understood manner to team coordinators, teams or individuals where appropriate.

	5.2. Effective and appropriate information provision is carried out with management and/or external personnel by using his Owen ***degree of autonomy***. 5.3. Written reports are concise and conform to enterprise procedures.

Variable	**Range**
Degree of autonomy	may include: • The competencies relate to personnel who work independently and may be responsible for a number of employees or in charge of a shift.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • effective scheduling and supervision of a team or individuals • Produce a portfolio that demonstrates that each element has been carried out. This can include rosters, schedules, quality related documentation and testimonials from superiors and workers being supervised • Evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of - • OHS standards • responsible person for OHS standards in the workplace • reporting procedures that are necessary with OHS matters • planning and implementing work schedules • determining priority of jobs • work scheduling procedures that are used within the organisation • scheduling changes • standards monitoring • information that is reported in performance monitoring • responsibility for providing instruction to achieve the required standard • staff and workforce development • performance monitoring of teams or individuals on performance • enhancing individual performance • changes that can be made to enhance team performance • advantage of providing written reports to management
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by effectively communicating with management and/or external personnel • collecting, analysing and organising information by accessing data about production processes and abilities of workers and customer demands and using these effectively in scheduling • planning and organising activities by monitoring the performance of tasks and adjusting scheduling

	• teamwork when establishing procedures that enable feedback from workers and encouraging suggestions that might enhance production • mathematical ideas and techniques by calculating job times and manipulating scheduling to make most efficient use of personnel and equipment • problem-solving skills by adjusting schedules to meet contingencies • use of technology by using production scheduling and office software
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Apply Advanced Software Applications to Digital Production**
Unit Code	**IND PGS4 14 1613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to correctly select and use a variety of high-end software applications to efficiently produce a standard job.

Element	Performance Criteria
1. Confirm client brief and job specifications	1.1. Details of the client design brief and job specifications are reviewed and clarified with client or supervisor. 1.2. The type of documents are determined and production requirements are assessed. 1.3. Client copy and images are assembled to conform to the design brief. 1.4. A number of ***software applications*** are selected to produce the job.
2. Arrange elements on page	2.1. Guides are set and grid is displayed to ensure artwork meets job specifications. 2.2. ***Elements*** are created and arranged on page with precise alignment. 2.3. Elements are arranged in layers to allow for effective selection and re-arrangement. 2.4. Imported text or data from other applications is correctly formatted and any cross-application formatting issues are resolved. 2.5. Text is formatted and flowed into document using most ***productive technique***. 2.6. Graphics and other elements are imported from other applications and are arranged according to the design brief.
3. Produce objects	3.1. ***Tools*** are used to produce objects and required attributes are entered and shapes manipulated, continuing until graphic framework is finalised. 3.2. Lines and curves are adjusted and edited to fit design specifications. 3.3. Objects are painted, transposed and strokes and effects are scaled according to the design brief. 3.4. Colours are created, edited and saved to the colour palette and saturation of colour is adjusted. 3.5. Colour and appearance attributes are selected and copied as required. 3.6. Gradients, fills and patterns are used to paint and blend as required by the layout and design brief.

4. Edit images	4.1. Image is retouched to conform with job specifications. 4.2. Colour and tone corrections are employed to conform with job specifications. 4.3. An appropriate ***contouring technique*** is applied to produce the best result depending on the image. 4.4. Edited image is saved in ***appropriate format*** to allow for import into other applications and to conform with job specifications. 4.5. Image storage requirements are identified and employed.
5. Produce print-ready file	5.1. File is checked for errors in accordance to client brief and job specifications. 5.2. Correct colour modes and libraries are used according to job specifications. 5.3. Sufficient image resolution is applied according to output specifications. 5.4. Bleeds and printer marks are applied. 5.5. Completed file is sent to be ripped according to enterprise procedures.

Variable	**Range**
Software applications	may include: • Adobe In design • Illustrator • Photoshop • QuarkXPress and Corel • New software applications and new versions of existing products entering the market regularly.
Elements	may include: • text frames • picture boxes • complex shapes • Lines or tabs.
Productive techniques	may include: • paragraph style • characters style • Eyedropper tool and linking of text frames.
Tools	may include: • pen • selection • Direct selection and shape tools.
Contouring techniques	may include: • using paths • layer masks • Quick mask or lasso tool.
Appropriate format	may include:

	• file types that support transparency or paths, such as: ➢ post Shop Designers (SD) ➢ Tagged Image File Format (TIFF) ➢ Encapsulated Post Script (EPS).

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • use a variety of software applications to produce a standard layout • find and use information relevant to the task from a variety of information sources • use at least two software applications to prepare two different sets of layouts according to enterprise standards
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • different qualities between file formats • when to use one file format opposed to another • type of file format that are not suitable for print-based jobs • different colour modes and the advantage and disadvantages of each • colour libraries and how to select them within a software application • printing processes used in digital production • importance of considering the printing process during the design phase • type of problems that can occur if the printing process isn't considered during the design • different techniques that can be employed to style text productively • ways text can be flowed throughout a document • how guides and rulers can be adjusted • circumstances when images are require to be edited or manipulated • why using colour profiles is required when preparing an image for printing • image storage capabilities • factors that may influence the grey balance of an image
Underpinning Skills	Demonstrates skills in: • Occupational Health and Safety (OHS) skills for using correct ergonomics when operating the computer • communication skills for expressing ideas and information by gaining client agreement on design layout • collecting, analysing and organising skills for storing and retrieving all required electronic files • planning and organising skills for outputting a proof and gaining approval by the client • teamwork skills for maintaining the production process in association with others • numeracy skills for determining image resolution • problem-solving skills for checking and fixing errors when preflighting • technical skills for using relevant hardware and software to produce a layout

Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Set up for Complex Flexographic Printing**
Unit Code	**IND PGS4 15 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to set up machines for non-routine flexographic printing.

Element	Performance Criteria
1. Confirm non-routine job specifications	1.1. Job requirements are read and interpreted from job documentation or production control system. 1.2. Set up is planned and carried out correctly in minimum time with minimum wastage. 1.3. Availability of all job related components is checked. 1.4. Proofed job is checked for conformance with job specifications.
2. Set up reel transportation and delivery system on web-fed machine	2.1. Reels are checked for treatment levels, coatings and printing side and age of product. 2.2. Unwind reels are secured on reel shaft. 2.3. Reels are correctly positioned on unwind stand. 2.4. Press is webbed for surface or reverse or perfecting printing according to ***non-routine*** job specifications. 2.5. Edge guide is centred and set to non-routine job specifications. 2.6. Unwind tension is set to suit ***substrate handling***. 2.7. Rewind tension is set to suit substrate. 2.8. Rewind tension is set to suit substrate. 2.9. PIV (Positively Infinitely Variable) drive is set for appropriate tensioning of substrate.
3. Select and prepare inks and solvents	3.1. ***Inks***/***coatings*** and solvents are selected according to job specifications and end-user requirements. 3.2. Quality and suitability of inks and solvents are checked and appropriate action is taken. 3.3. Inks and solvents are prepared according to OHS requirements, and manufacturer's/supplier's instructions with suitable precautions to minimise waste. 3.4. Correct colour and weight/volume of ink are mixed and viscosities checked and modified according to the press requirements and non-routine job specifications. 3.5. Ink formula and approved colour drawdowns are appropriately recorded. 3.6. Inks and solvents are appropriately labelled, handled and stored according to manufacturer's/supplier's instructions and the relevant hazardous liquids storage regulations.

4. Set up machine for complex flexographic printing	4.1. Flexographic plate cylinders are installed and register adjustments centred OR 4.2. Sleeves are installed in press and register adjustments made OR 4.3. Plate mounting sheets are mounted on cylinders in press and register adjustments made. 4.4. Plate cylinders are gauged up or pre-set to impression. 4.5. Anilox rollers are selected to suit individual colour and plate reproduction requirements for each unit. 4.6. Appropriate ink metering system is selected for each unit. 4.7. Inking system is set up and roller nips/blades are set correctly. 4.8. Ink circulation is maintained at correct level and flow for ***machine***. 4.9. Viscosities are adjusted according to job specifications. 4.10. Air volume and drier temperatures curing units are selected to suit inks, ***substrate types***, solvents and according to job specifications. 4.11. Air volume is adjusted between colours to maximise drying and minimise air overspill.
5. Set up in-line units for basic processes	5.1. Minor ***in-line processes*** printing/converting/binding units are set up for basic processes and adjusted according to machine requirements and job specifications. 5.2. Assistance is given in set up of major in-line printing/converting/binding units.
6. Conduct proof run	6.1. Material to be used for proof is organised correctly. 6.2. Press is set up and operated according to OHS guidelines. 6.3. Print impressions are set to minimum kiss impression. 6.4. Web tensions are correctly set at unwind, between stations and rewind. 6.5. Drying is checked as sufficient to key ink to the substrate. 6.6. The viscosities are adjusted to obtain the correct colour at proof speed and checked against colour matching system. 6.7. The substrate is checked against job specifications.
7. Organise proof inspection and/or testing	7.1. Proof is visually inspected and/or tested or laboratory testing is organised according to enterprise procedures. 7.2. Production does not commence without client approval or authority where appropriate.
8. Readjust settings to production speed	8.1. Production speed print results are interpreted and appropriate adjustments are made to press, ink and substrate settings. press performance 8.3. Web is spliced at production speed and further samples are obtained for quality inspections at appropriate intervals. 8.4. Press settings are documented and samples are retained.

Variable	Range
Non-routine	may include: • Non-routine within this context relates to the set up and production of print runs. The set-up of equipment and production involves a significant amount of deviation from using standard equipment settings. It also involves significant problem solving and the development of new criteria and procedures for performing current practices. It does not refer to a job that an individual does only occasionally.
Substrate handling	may include: • Wide and narrow reel delivery systems.
Inks/coatings	may include: • Range of inks commonly used in 4 or more colour printing, including standard and special colours.
Machine	may include: • Range of stack, in-line and central impression flexographic printing machines with manual, semi-automated, fully automated or computerised process control.
Substrate types	may include: • Range of substrates within the major categories of paper, pressure sensitive material, board, corrugated board, plastics and related films, or metal.
In-line processes	may include: • minor processes that are integral to this competency can include basic in-line operations such as perforating, numbering, date coding, slitting that do not in themselves constitute another defined unit of competency. Where a major in-line process is defined as a separate competency (e.g. flat-bed cutting, folding) it should be assessed as such.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Set up flexographic printing machines for non-routine print jobs. The individual will conduct a proof run and adjust settings to ensure production speeds are attained • demonstrate use of computerised control, monitoring and data entry systems if available and appropriate • demonstrate an ability to find and use information relevant to the task from a variety of information sources • set up a flexographic printing machine for a complex job on TWO occasions (if possible using different substrates and if possible including at least TWO in-line processes) according to manufacturer's and job specifications, enterprise procedures and the Performance Criteria • Evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity.

Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • interpreting complex job specifications • production problems that could eventuate by not reading and understanding the job specifications • mounting and proofing flexographic plates • OHS factors needing to be considered when mounting and proofing flexographic plates • most common cause of photopolymer plates crazing on the image side • resiliency of the printing plate • main advantage of using thin photopolymer plates in process printing • faults that may be detected on new plates • types of solvents that should be used on photopolymer plates • benefits of optical mounting • purpose of binding plates after mounting • possible print faults that could be eliminated by using cushion mount • installation of printing cylinders or sleeves • OHS factors that need to be considered when installing printing cylinders or sleeves • precautions that should be undertaken to ensure that the plates and cylinders or sleeves are not damaged during installation • checking to ensure plates and cylinders or sleeves have been installed correctly • reel transportation system • OHS precautions to be observed when webbing up the machine • position of the reel • how the substrate pulled into the machine • result of insufficient unwind tension • result of excessive unwind tens • function of the "Dancer" roller on a web machine • function of the PIV unit • adjustments to the PIV • function of the lay-on roller • what will be the effect of excessive lay-on roller pressure • what can happen if the web is not spliced correctly • how does the particular web viewing device work • delivery system • OHS precautions that must be observed when setting up the delivery • how web controlled in the rewind unit
Underpinning Skills	• OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by interpreting the job brief and advising the client (internal or external) about options and limitations • collecting, analysing and organising information by collecting and analysing data about printing process, machine specifications and performance to calculate appropriate adjustments for the job

	• planning and organising activities by providing information about time and materials requirements for production scheduling • teamwork when cooperating with other workers and coordinating the production unit to ensure efficient operation • mathematical ideas and techniques by calculating substrate requirements and pressures • problem-solving skills by recognising proofing faults and calculating adjustments necessary to meet job specifications • use of technology by using monitoring equipment and computerised production records
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Set up for Complex Gravure Printing**
Unit Code	**IND PGS4 16 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to set up for non-routine gravure printing.

Element	Performance Criteria
1. Confirm non-routine job specifications	1.1. Job requirements are read and interpreted from job documentation or production control system. 1.2. Set up is planned and carried out correctly in minimum time with minimum wastage. 1.3. Availability of all job related components is checked.
2. Set up reels	2.1. Unwind and rewind reels are set up and adjusted according to job specifications. 2.2. Webbing procedures are carried out according to ***non-routine*** job specifications. 2.3. Web-control system is set up and adjusted according to job specifications. 2.4. Reels are spliced/joined according to job specifications. 2.5. Printed web viewing devices are set up and adjusted according to job specifications. 2.6. The folder and sheeter are set up and adjusted according to job specifications. 2.7. Set off/marking prevention devices are set up and adjusted according to job specifications.
3. Select and prepare inks and additives	3.1. ***Inks/coatings*** dyes or additives are selected according to job specifications and end-user requirements. 3.2. Quality and suitability of inks, dyes or additives are checked and appropriate action is taken. 3.3. Inks, dyes and additives are prepared according to OHS requirements, and manufacturer's/supplier's instructions with suitable precautions to minimise waste. 3.4. Correct colour and weight/volume of ink are mixed and prepared to match the requirements of the printing process and job specifications. 3.5. Formulation of the ink, ***colour match* systems** and the approved colour are appropriately recorded. 3.6. Inks, dyes and additives are appropriately labelled, handled and stored according to manufacturer's/supplier's instructions to prevent damage and hazards to personnel and prolong shelf life.

4. Set up machine for complex gravure printing	4.1. Gravure cylinders are selected, installed, set up and adjusted according to job specifications. 4.2. Impression roller is set up and adjusted according to job specifications. 4.3. Inking system/doctor blade is set up and adjusted according to the gravure process and job specifications. 4.4. Drying system is set up and adjusted according to job specifications.
5. Conduct proof run	5.1. Material to be used for proof is organised correctly. 5.2. ***Machine*** is operated according to manufacturer's and enterprise procedures to produce a specified proof. 5.3. Machine is operated according to manufacturer's and enterprise procedures to produce a specified proof. 5.4. Production does not commence without client OK or authority where appropriate. 5.5. Results are interpreted and adjustments carried out according to product and machine specifications to determine adjustment requirements.

Variable	**Range**
Non**-**routine	may include non-routine within this context relates to the set up and production of print runs. The set-up of equipment and production involves a significant amount of deviation from using standard equipment settings. It also involves significant problem solving and the development of new criteria and procedures for performing current practices. It does not refer to a job that an individual does only occasionally.
Inks**/**coatings	may include range of inks commonly used in 3 or more colour printing, including standard and special colours.
Color matching systems	may include: • Use of viscosity controls, densitometers and spectrophotometer.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Set up gravure printing machines for non-routine print jobs. The individual will conduct a proof run and adjust settings to ensure production speeds are attained • demonstrate use of computerised control, monitoring and data entry systems if available and appropriate • demonstrate an ability to find and use information relevant to the task from a variety of information sources • set up a gravure printing machine for a complex job on TWO occasions (if possible using different substrates and if possible including at least TWO in-line processes) according to manufacturer's specifications, enterprise procedures and the Performance Criteria • evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity

Underpinning Knowledge and Attitudes	Demonstrates knowledge of - • need to ensure that the job specifications are read and properly understood • production problems that could eventuate by not reading and understanding the job specifications • person / people any production problems should be discussed with • OHS precaution that must be observed when installing printing cylinders on the machine • determining the optimum print sequence • visual aid on the cylinder that identifies the colour of ink to be used • precautions that are taken to ensure that the cylinders are not damaged during installation • OHS precautions that must be observed when webbing up the machine • determining the position of the reel • effect if the brake tension is not set correctly • function of the "Dancer" roller on a web machine • effect if the web is not spliced correctly • workings of the particular web viewing device • principle of ESA roller operation on the gravure printing machine • type of substrate that should be used on the ESA roller • OHS precautions that must be observed when setting up the delivery • controlling of the web in the rewind unit • result of incorrect rewind tension • remedial steps that can be taken if there is a possibility of the ink marking in the rewind • problems that could be attributed to a blunt knife when sheeting • use of air blast play in the delivery of sheets • OHS precautions that must be observed when preparing inks and additives • details that are necessary to check an ink's suitability for the printing process • special end-use requirements that may be necessary • additives used in gravure inks • range in seconds for zahn cup measurements • effect foaming has in a zahn cup when measuring the ink viscosity • bringing pigmented ink to operating temperature before correcting the viscosity • essential checks to be made • advantage of using automatic viscosity controllers • precautions that you observe to minimise waste when preparing the ink • shelf life of most inks • conditions that are relevant to the storage of inks and additives • conventions that should be adhered to when labelling mixed inks • advantage of using automatic viscosity controllers

	• precautions that you observe to minimise waste when preparing the ink • shelf life of most inks • conditions that are relevant to the storage of inks and additives • conventions that should be adhered to when labelling mixed inks • OHS factors that need to be considered when setting up the machine • function of chill rollers on a machine • main advantage of gauging up and dry register prior to printing a job • result of excess printing pressure • determining the pressure to be applied to the doctor blade • print faults that could be caused by excessive overspill of air from the inter-colour drier • recommended air ratio for efficient inter-colour drying • advantages of using high velocity air in the drying system • OHS precautions that must be observed when slitting on the machine • pre-heat web temperature required for lamination • reasons for a printed product to be punched • considerations when setting hole punching in relation to repeat length • purpose of the dwell when cutting and creasing in-line • controlling the ratio of print to in-line speed controlled • result of excessive pressure on the slitters
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by interpreting the job brief and providing advice to internal or external clients about options and limitations • collecting, analysing and organising information by collecting and analysing data about printing process, machine specifications and performance to calculate appropriate adjustments for the job • planning and organising activities by providing information about time and materials requirements for production scheduling • teamwork when cooperating with other workers and coordinating the production unit to ensure efficient operation • mathematical ideas and techniques by calculating cylinder position, pressures and substrate requirements • problem-solving skills by recognising proofing faults and calculating adjustments necessary to meet job specifications • use of technology by using monitoring equipment and computerised production records
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Produce Specialist Flexographic Printed Product**
Unit Code	**IND PGS4 17 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to produce specialized flexographic printing that requires a certain amount of problem solving and experimentation with the substrate and press settings.

Element	Performance Criteria
1. Maintain specialised flexographic printing process	1.1. Flexographic plate and plate cylinder or sleeve condition is monitored, evaluated and adjusted to ensure the quality of printed product meets the standard of the approved proof. 1.2. Flexographic impression roller condition is monitored and evaluated to ensure the quality of printed product meets the standard of approved proof. 1.3. Flexographic inking system and doctor blade condition is monitored, evaluated and adjusted to ensure quality of ***specialised*** printed product meets the standard of approved proof. 1.4. Drying systems are monitored, evaluated and adjusted to ensure quality of the specialised printed product meets the standard of approved proof.
2. Maintain specialised production process	2.1. Production process is maintained in association with fellow workers and according to enterprise procedures and planned daily schedule. 2.2. Production is maintained according to OHS requirements, manufacturer's specifications and enterprise procedures. 2.3. Manual and/or automatic control is used according to job specifications. 2.4. Performance is monitored, adjusted and verified using the process control system according to enterprise procedures. 2.5. ***Ink***/***coatings*** performance, colour, register and position of print are monitored, evaluated and adjusted throughout production run.
3. Tune and adjust machinery	3.1. Idiosyncrasies of ***machines*** are reviewed and adjustments or tuning undertaken to compensate or to exploit the idiosyncrasy, within manufacturer's specifications. 3.2. Options are assessed to determine most effective/efficient method of production, ensuring highest quality and yield from machinery. 3.3. A test run confirms correct options and settings or the need for further adjustment or tuning to meet quality standards. 3.4. Options and recommendations are documented for future reference according to enterprise procedures.

	3.5. Instruction on new practices is provided to machine operator or finisher, if required.
4. Troubleshoot machinery and material problems	4.1. Corrective or preventive action is recommended and implemented where appropriate. 4.2. Changes are communicated to relevant personnel in a logical and easily understood manner. 4.3. Changes are monitored to confirm improvement to production efficiency. 4.4. Ongoing problems are reported according to enterprise procedures.
5. Conduct shutdown of production process	5.1. Correct shutdown sequence is followed according to manufacturer's specifications and enterprise procedures 5.2. Shutdown is conducted in association with fellow workers and in compliance with OHS requirements. 5.3. Reels and cores are removed from press. 5.4. Unused ink is drained back to containers and correctly labelled and stored according to manufacturer's/supplier's specifications and enterprise procedures. 5.5. Solid and liquid waste is removed from operating area and recycled or disposed of, where required, according to regulatory requirements and enterprise procedures. 5.6. All products are removed from operating area.

Variable	**Range**
Specialized	may include: • specialised within this context relates to the set up and production of print runs that involve new products, or a new mix of substrates and inks that requires a certain amount of problem solving and experimentation with the substrate and press settings. The set up of equipment and production involves the development of new set up and production approaches based on solving technical problems arising from new product or equipment combinations.
Inks**/**coatings	may include range of inks commonly used in 4 or more colour printing, including standard and special colours.
Machines	may include range of stack, in-line and central impression flexographic printing machines with manual, semi-automated, fully automated or computerised process control.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Operate a reel-fed flexographic press ensuring an efficient 3 or more colour production flow that maintains product quality standards. Any production problems are anticipated and rectified with minimum downtime. The machine is correctly shut down and cleaned according to OHS guidelines

	• demonstrate use of computerised control, monitoring and data entry systems if available and appropriate • demonstrate an ability to find and use information relevant to the task from a variety of information sources • monitor production output and make necessary adjustments to maintain print quality on a flexographic machine whilst producing a complex print on TWO occasions (if possible using different substrates and if possible including at least TWO in-line processes) according to job specifications, enterprise procedures and the Performance Criteria • evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • causes of reel wander • causes of the web breaking at the unwind unit • difference between a "flying paster" and "zero speed" type reel-stand • print fault that would result from the reel being run out of centre • possible faults in the unwind section could that cause a web break • OHS risks associated with rewinding and sheeting • safety feature that is in the delivery system if the web jams up • causes of sheet cut-off wander • effect of poorly adjusted nip rollers when rewinding and sheeting • result if the plate lifts on the leading edged during a print run • effect on printed product of a build-up of ink on the impression cylinder • cause of ink foaming in the ink tray • effect of too much reducer in the ink • action that reduces wear of the doctor blade • need for all solvents to be removed from the final ink film • link between driers and set off and marking • causes of UV ink drying • substrate to distortion • effect in the chillers if the drying temperature was too low • effect of incorrect drying temperature on the finished product • Effect of eating or drinking near the machine when using UV inks? • need to frequently examine the in-line components of the job • consistency checks to be made of the punching unit checked • result of excessive pressure on the slitters
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by providing feedback to internal and external clients • collecting, analysing and organising information by identifying and recording specialised production practices

	• planning and organising activities by adjusting the production process to achieve specialised printing requirements • teamwork when communicating with work team members and workers involved in prior and subsequent processes to ensure efficient production • mathematical ideas and techniques by calculating consumables and personnel requirements to meet production schedules • problem-solving skills by adjusting machinery settings to determine the required tolerances to meet specialised requirements • use of technology by using machinery to produce specialized flexographic printed product
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Produce Specialist Gravure Printed Product**
Unit Code	**IND PGS4 18 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to produce specialized gravure printed product that requires a certain amount of problem solving and experimentation with the substrate and press settings.

Element	Performance Criteria
1. Maintain specialised gravure printing process	1.1. Gravure cylinder condition is monitored, evaluated and adjusted to ensure the quality of printed product meets the standard of the sample sheet. 1.2. Gravure impression roller condition is monitored, evaluated and maintained to ensure that the quality of the ***specialised*** printed product meets the standard of the sample sheet. 1.3. Gravure inking system and doctor blade are monitored, evaluated and adjusted to ensure quality of specialised printed product meets the standard of sample sheet. 1.4. Drying systems are monitored, evaluated and adjusted to ensure quality of specialised printed product meets the standard of approved proof. 1.5. In-line printing/converting/binding/finishing processes are monitored, evaluated and adjusted to ensure quality of specialised product meets the standard of the approved proof.
2. Maintain specialised production process	2.1. Production process is operated in association with fellow workers and according to enterprise procedures and planned daily schedule. 2.2. Production is maintained according to OHS requirements, manufacturer's specifications and enterprise procedures. 2.3. Manual and/or automatic control is used according to job specifications. 2.4. Performance is monitored and verified using the process control system according to enterprise procedures. 2.5. ***Ink***/***coatings*** performance, ***colour matching***, register and position of print are monitored, evaluated and adjusted throughout production run 2.6. Production difficulties are anticipated and preventive action is taken to prevent occurrence by timely intervention. 2.7. Process adjustments to eliminate problems are reported according to enterprise procedures. 2.8. Waste is sorted according to enterprise procedures.
3. Tune and adjust machinery	3.1. Idiosyncrasies of ***machines*** are reviewed and adjustments or tuning undertaken to compensate or to exploit the idiosyncrasy, within

	manufacturer's specifications. 3.2. Idiosyncrasies of machines are reviewed and adjustments or tuning undertaken to compensate or to exploit the idiosyncrasy, within manufacturer's specifications. 3.3. A test run confirms correct options and settings or the need for further adjustment or tuning to meet quality standards. 3.4. Options and recommendations are documented for future reference according to enterprise procedures. 3.5. Instruction on new practices is provided to machine operator or finisher, if required.
4. Troubleshoot machinery and material problems	4.1. Corrective or preventive action is recommended and implemented where appropriate. 4.2. Changes are communicated to relevant personnel in a logical and easily understood manner. 4.3. Changes are monitored to confirm improvement to production efficiency. 4.4. ***Design*** ongoing problems are reported according to enterprise procedures.
5. Conduct shutdown of production process	5.1. Correct shutdown sequence is followed according to manufacturer's specifications and enterprise procedures. 5.2. Shutdown is conducted in association with fellow workers and in compliance with OHS requirements. 5.3. Unused ***substrate types*** of ink is correctly labelled and stored according to manufacturer's/supplier's specifications and enterprise procedures. 5.4. Solid and liquid waste is removed from operating area and recycled or disposed of, where required, according to regulatory requirements and enterprise procedures. 5.5. All product is removed from operating area. 5.6. Machine faults requiring repair are identified and reported to designated person according to enterprise procedures. 5.7. Machine faults requiring repair are identified and reported to designated person according to enterprise procedures.

Variable	**Range**
Specialized	may include: • specialised within this context relates to the set up and production of print runs that involve new products, or a new mix of substrates and inks that requires a certain amount of problem solving and experimentation with the substrate and press settings. The set up of equipment and production involves the development of new set up and production approaches based on solving technical problems arising from new product or equipment combinations.

Inks/coatings	may include: • Range of inks commonly used in 3 or more colour printing, including standard and special colours.
Color matching	may include: • Use of viscosity controls, densitometers and spectrophotometer.
Machines	may include: • Range of stack, in-line and central impression printing machines with manual, semi-automated, fully automated or computerised process control.
Design	may include: • Complex graphics and text. Critical "tight" registration, fit and position, registration should be at least that required for four-colour process work.
Substrate types	may include: • Range of substrates within the major categories of paper, pressure sensitive materials, board, plastics and related films, or metal. • Wide and narrow reel handling systems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Operate a gravure press ensuring an efficient specialised production flow that maintains product quality standards. Any production problems are rectified with minimum downtime. The machine is correctly shut down and cleaned according to OHS guidelines • demonstrate use of computerised control, monitoring and data entry systems if available and appropriate • demonstrate an ability to find and use information relevant to the task from a variety of information sources • monitor production output and make necessary adjustments to maintain print quality on a gravure machine whilst producing a complex print on TWO occasions (if possible using different substrates and if possible including at least TWO in-line processes) according to job specifications, enterprise procedures and the Performance Criteria • Evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • reel to wander causes • web break causes at the unwind unit • difference between a "flying paster" and "zero speed" type reel-stand • a Print fault that would result from the reel being run out of centre • possible faults in the unwind section that could cause a web break • OHS risks associated with rewinding and sheeting • safety feature that is in the delivery system if the web jams up • sheet cut-off wandering • effect of poorly adjusted nip rollers when rewinding and sheeting

	• effect of a build-up of ink on the impression cylinder on the printed product • cause of the ink to foam in the ink tray • effect of too much reducer in the ink • an action that reduces wear of the doctor blade • need for all solvents be removed from the final ink film • link between driers and set off and marking • cause substrate distortion • effect in the chillers if the drying temperature was too low • effect of incorrect drying temperature on the finished product • effect of inadequate communication within the work team on a gravure printing machine • safety features within the organisation that aid in maintaining effective production • ramifications if machine guards are removed and/or micro switches are disconnected on a machine • legally responsibility for the removal of machine guards and/or disconnection of micro switches • most accurate method of checking register during a production run • need to take immediate action when production problems are anticipated • action that is taken to eliminate further processing of unacceptable printed product • result to the substrate if the relative humidity is increased in the press room • procedure to care for a newly delivered substrate to the press room • waste sorting • advantage of keeping reusable waste • industry standards that can be applied to enhance effective communication with the client • necessary procedures that the client should follow to "OK" a printed product • need to call service personnel to correct a machine problem • enterprise procedures that are in place to report any machine operating problems • result if correct shutdown procedures were not followed • need for correct shutdown procedures to be conducted with fellow workers • advantages that result from proper labelling and storage of excess inks and materials
Underpinning Skills	• OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by providing feedback to internal and external clients about printing, in-line processes and job specifications • collecting, analysing and organising information by collating details of job and machine specifications and printing processes to ensure efficient production

	• planning and organising activities by providing information about time and materials requirements for production scheduling • teamwork when maintaining the production process in association with others • mathematical ideas and techniques by calculating consumables and personnel requirements to meet production schedules • problem-solving skills by identifying print problems and correcting during print run • use of technology by using monitoring systems, understanding their output and feeding into production management systems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Analyze Manual Handling Processes**
Unit Code	**IND PGS4 19 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to analyze manual handling in terms of its efficiency and safety.

Element	Performance Criteria
1. Assess manual handling risks	1.1. Identify ***manual handling hazards*** in work area. 1.2. Assess risks arising from those hazards.
2. Analyse physical effort requirements of job	2.1. Determine basic manual handling requirements of job. 2.2. Analyse requirements in terms of components such as lift, move, place, hold. 2.3. Analyse items to be handled in terms such as weight, size, shape or other hazards.
3. Determine time/effort components of physical effort	3.1. Break required movement pattern down into movement components. 3.2. Determine time and effort requirements for movements. 3.3. Develop alternative movement patterns. 3.4. Determine time and effort requirements for alternative movements. 3.5. Determine handling aids required to assist movement. 3.6. Determine preferred movement pattern(s).
4. Analyse the ergonomics of physical effort	4.1. Analyse the ergonomics of the preferred movement pattern. 4.2. Develop substitute movements for any movement which is not ergonomically sound. 4.3. Determine handling aids required to improve ergonomics of required movements.
5. Optimise application of physical effort	5.1. Select movement patterns which are ergonomically sound and time and effort efficient. 5.2. Train all relevant people to use these methods. 5.3. Ensure ***procedures*** and practices reflect the optimum methods.

Variable	Range
Manual handling hazards	may include manual handling hazards need to be defined in terms of the relevant OHS acts, regulations, codes of practice, industry standards and best practice.
Procedures	may include: • All work instructions, standard operating procedures, formulas/recipes, batch sheets, temporary instructions and similar instructions provided for the smooth running of the plant. They may be written, oral, computer-based or in some other form

	• Good operating practice as may be defined by industry codes of practice (e.g. Good Manufacturing Practice (GMP), Responsible Care) and government regulations.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • The competent team leader/senior operator will be able to examine any job for its physical components and then determine a better way of doing it. As a side benefit they will become more aware of poor manual handling practice and raise an alert to it. Evidence should be available of the analysis and improvements of the physical/manual handling aspects of jobs in the workplace • Where evidence is from continuous improvement activities, then a range of such improvements needs to be considered to provide sufficient evidence. Where evidence is coming from one, complex improvement activity then it may provide sufficient evidence.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of - • communication • analysis • teamwork • basic mathematics • problem solving • relevant OHS acts and regulations as applied to manual handling • principles of efficient movement • principles of efficient job and work method design • principles of work analysis and ergonomics/safe movement
Underpinning Skills	Demonstrates skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by determining time/effort components of physical effort • collecting, analysing and organising information by determining time/effort components of physical effort • planning and organising activities by selecting movement patterns which are ergonomically sound and time and effort efficient • teamwork when determining time/effort components of physical effort • mathematical ideas and techniques by optimising application of physical effort • problem-solving skills by optimising application of physical effort • use of technology by optimizing application of physical effort
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Operate a Card Printing Machine and Pack Product**
Unit Code	**IND PGS4 20 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to operate a smart card machine and pack product.

Element	Performance Criteria
1. Monitor production process	1.1. All details required for the job are checked and confirmed against ***job specifications***. 1.2. The supply of ***correct materials*** throughout the run is maintained. 1.3. Machine is run at optimum seed for maintaining quality outputs. 1.4. Samples from the machine are selected and checked to ensure they confirm to job specifications. 1.5. Machines are adjusted to maintain quality of outputs.
2. Maintain quality	2.1. Correct procedures for the removal of waste are followed according to enterprise procedures. 2.2. Samples are continuously monitored for defects and defects are removed. 2.3. The efficiency, quality and output rate of the production run are monitored for problems and any deficiencies resolved. 2.4. Milled cavities are checked to ensure the right cavity depth for the chips. 2.5. Die cuts are correct and meet quality standards. 2.6. The correct amount of glue is applied by the dispensing station. 2.7. The chips are correctly inserted into the cavity by the implanting module. 2.8. Print quality meets the standards in the job specifications or sample.
3. Code and check chips	3.1. Encoder settings are correct and conform to job specifications. 3.2. Tester settings are correct and conform to job specifications. 3.3. The details of any cards needing to be remade are entered into computer console
4. Monitor printer unit	4.1. Ink and solvent levels are monitored and filled when required and stock levels are recorded according to enterprise procedures. 4.2. Quality of inkjet is monitored to ensure it conforms to job specifications. 4.3. Chemicals are handled according to OHS requirements. 4.4. Drying is checked as sufficient to key ink to the substrate.

5. Identify problems	5.1. Faults that affect the quality of the cards are identified and rectified. 5.2. Problems that reduce the rate of output are identified and fixed. 5.3. Faults that affect the efficient operation of equipment are identified and resolved.
6. Unload and pack cards	6.1. Cards are unloaded according to OHS requirements, manufacturer's specifications and enterprise procedures. 6.2. Reconciliation and final quality check are documented. 6.3. Cards are prepared (stacked, wrapped and labelled) for next process according to manufacturer's specifications and enterprise procedures. 6.4. Wastage is recorded and disposed of according to enterprise procedures.
7. Shut down machine	7.1. Dispensing needle is moved to the safety position and solvent is checked to ensure coverage of the needle. 7.2. Inkjet is cleaned and shutdown according to manufacturer's specifications. 7.3. The encoding computer is shut down in the correct manner to ensure no loss of data. 7.4. The milling vacuum is emptied and cleaned. 7.5. The machine and work area are cleaned according to enterprise procedures. 7.6. The air supply is turned off. 7.7. Waste chemicals are handled and disposed of according to OHS requirements.

Variable	**Range**
Job specifications	may include job sheets, batch processing orders, job specs.
Correct materials	may include glues, papers, coated and uncoated, pre-printed.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • operate a smart card machine and produce cards according to job specifications and within the production timeframe • demonstrate all safety devices on the machine • operate a smart card machine and produce cards over two different jobs • evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • operation of the card printing unit • operation of the card encoding unit

	• production quality requirements • waste disposal procedures • smart card technology • correct material handling procedures • principles of printing and ink usage
Underpinning Skills	Demonstrates skills in: • OHS when ensuring that the work area is safe and ready for production according to safety requirements • communication skills when recording details of production wastage • planning and organising when coding and checking chips before operating the printer unit • teamwork when maintaining the production process in association with other staff • applying mathematical ideas and techniques when monitoring the rate of machine output • using technology when operating a smart card machine • problem solving by monitoring the efficiency, quality and output rate of the production run and resolving any problems as they arise
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Plan and Organize Work**
Unit Code	**IND PGS4 21 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitude required in planning and organizing work activities in a production application. It may be applied to a small independent operation or to a section of a large organization.

Elements	Performance Criteria
1. Set objectives	1.1 ***Objectives*** are planned consistent with and linked to work activities in accordance with organizational aims. 1.2 Objectives are stated as measurable targets with clear time frames. 1.3 Support and commitment of team members are reflected in the objectives. 1.4 Realistic and attainable objectives are identified.
2. Plan and schedule work activities	2.1 Tasks/work activities to be completed are identified and prioritized as directed. 2.2 Tasks/work activities are broken down into steps in accordance with set time frames and achievable components. 2.3 Task/work activities are assigned to appropriate team or individuals in accordance with agreed functions. 2.4 ***Resources*** are allocated as per requirements of the activity. 2.5 ***Schedule of work activities*** is coordinated with personnel concerned.
3. Implement work plans	3.1 ***Work methods and practices*** are identified in consultation with personnel concerned. 3.2 ***Work plans*** are implemented in accordance with set time frames, resources and ***standards.***
4. Monitor work activities	4.1 Work activities are monitored and compared with set objectives. 4.2 Work performance is monitored. 4.3 Deviations from work activities are reported and recommendations are coordinated with appropriate personnel and in accordance with set standards. 4.4 Reporting requirements are complied with in accordance with recommended format. 4.5 Timeliness of report is observed. 4.6 Files are established and maintained in accordance with standard operating procedures.

5. Review and evaluate work plans and activities	5.1 Work plans, strategies and implementation are reviewed based on accurate, relevant and current information. 5.2 Review is done based on comprehensive consultation with appropriate personnel on outcomes of work plans and reliable feedback. 5.3 Results of review are provided to concerned parties and formed as the basis for adjustments/simplifications to be made to policies, processes and activities. 5.4 Performance appraisal is conducted in accordance with organization rules and regulations. 5.5 Performance appraisal report is prepared and documented regularly as per organization requirements. 5.6 Recommendations are prepared and presented to ***appropriate personnel/authorities***. 5.7 ***Feedback mechanisms*** are implemented in line with organization policies.

Variable	**Range**
Objectives	• Specific • General
Resources	• Personnel • Equipment and technology • Services • Supplies and materials • Sources for accessing specialist advice • Budget
Schedule of work activities	• Daily • Work-based • Contractual Regular
Work methods and practices	• Legislated regulations and codes of practice • Industry regulations and codes of practice • Occupational health and safety practices
Work plans	• Daily work plans • Project plans • Program plans • Resource plans • Skills development plans • Management strategies and objectives
Standards	• Performance targets • Performance management and evaluation systems • Occupational standards • Employment contracts • Client contracts

	• Discipline procedures • Workplace assessment guidelines • Internal quality assurance • Internal and external accountability and auditing requirements • Training Regulation Standards • Safety Standards
Appropriate personnel/ authorities	• Appropriate personnel include: • Management • Line Staff
Feedback mechanisms	• Feedback mechanisms include: • Verbal feedback • Informal feedback • Formal feedback • Questionnaire • Survey • Group discussion

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • set objectives • plan and schedule work activities • implement work plans • monitor work activities • review and evaluate work plans and activities
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities • organizations policies, strategic plans, guidelines related to the role of the work unit • team work and consultation strategies
Underpinning Skills	Demonstrates skill of: • planning • leading • organizing • coordinating • communication skills • inter-and intra-person/motivation skills • presentation skills
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Migrate to New Technology**
Unit Code	**IND PGS4 22 0613**
Unit Descriptor	This unit defines the competence required to apply skills and knowledge in using new or upgraded technology. The rationale behind this unit emphasizes the importance of constantly reviewing work processes, skills and techniques in order to ensure that the quality of the entire business process is maintained at the highest level possible through the appropriate application of new technology. To this end, the person is typically engaged in on-going review and research in order to discover and apply new technology or techniques to improve aspects of the organization's activities.

Elements	Performance Criteria
1. Apply existing knowledge and techniques to technology and transfer	1.1 Situations are identified where existing knowledge can be used as the basis for developing new skills. 1.2 New or upgraded technology skills are acquired and used to enhance learning. 1.3 New or upgraded equipment are identified, classified and used where appropriate, for the benefit of the organization.
2. Apply functions of technology to assist in solving organizational problems	2.1 Testing of new or upgraded equipment is conducted according to the specification manual. 2.2 Features of new or upgraded equipment are applied within the organization 2.3 Features and functions of new or upgraded equipment are used for solving organizational problems 2.4 Sources of information relating to new or upgraded equipment are accessed and used
3. Evaluate new or upgraded technology performance	3.1 New or upgraded equipment is evaluated for performance, usability and against OHS standards**.** 3.2 ***Environmental considerations*** are determined from new or upgraded equipment. 3.3 ***Feedback*** is sought from users where appropriate.

Variables	Range
Environmental Considerations	May include but is not limited to recycling, safe disposal of packaging (e.g. cardboard, polystyrene, paper, plastic) and correct disposal of waste materials by an authorized body
Feedback	May include surveys, questionnaires, interviews and meetings.

Evidence Guide	
Critical Aspects of Competence	Competence must confirm the ability to transfer the application of existing skills and knowledge to new technology
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Broad awareness of current technology trends and directions in the industry (e.g. systems/procedures, services, new developments, new protocols) • Vendor product directions • Ability to locate appropriate sources of information regarding metal manufacturing and new technologies • Current industry products/services, procedures and techniques with knowledge of general features • Information gathering techniques
Underpinning Skills	Demonstrate skills of: • Research skills for identifying broad features of new technologies • Ability to assist in the decision making process • Literacy skills in regard to interpretation of technical manuals • Ability to solve known problems in a variety of situations and locations • Evaluate and apply new technology to assist in solving organizational problems • General analytical skills in relation to known problems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Establish Quality Standards**
Unit Code	**IND PGS4 23 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to establish quality specifications for work outcomes and work performance. It includes monitoring and participation in maintaining and improving quality, identifying critical control points in the production of quality output and assisting in planning and implementing of quality assurance procedures.

Elements	Performance Criteria
1. Establish quality specifications for product	1.1 Market specifications are ***sourced*** and ***legislated requirements*** identified. 1.2 Quality specifications are developed and agreed upon 1.3 Quality specifications are documented and introduced to organization staff / personnel in accordance with the organization policy 1.4 Quality specifications are updated when necessary
2. Identify hazards and critical control points	2.1. Critical control points impacting on quality are identified. 2.2. Degree of risk for each hazard is determined. 2.3. Necessary documentation is accomplished in accordance with organization quality procedures
3. Assist in planning of quality assurance procedures	3.1 Procedures for each identified control point are developed to ensure optimum quality. 3.2 Hazards and risks are minimized through application of appropriate controls. 3.3 Processes are developed to monitor the effectiveness of quality assurance procedures.
4. Implement quality assurance procedures	4.1 Responsibilities for carrying out procedures are allocated to staff and contractors. 4.2 Instructions are prepared in accordance with the enterprise's quality assurance program. 4.3 Staff and contractors are given induction training on the quality assurance policy. 4.4 Staff and contractors are given in-service training relevant to their allocated ***safety procedures***.
5. Monitor quality of work outcome	5.1 Quality requirements are identified 5.2 Inputs are inspected to confirm capability to meet quality requirements

	5.3 Work is conducted to produce required outcomes 5.4 Work processes are monitored to confirm quality of output and/or service 5.5 Processes are adjusted to maintain outputs within specification.
6. Participate in maintaining and improving quality at work	6.1 Work area, materials, processes and product are routinely monitored to ensure compliance with quality requirements 6.2 Non-conformance in inputs, process, product and/or service is identified and reported according to workplace reporting requirements 6.3 Corrective action is taken within level of responsibility, to maintain quality standards 6.4 Quality issues are raised with designated personnel
7. Report problems that affect quality	7.1 Potential or existing quality problems are recognized. 7.2 Instances of variation in quality are identified from specifications or work instructions. 7.3 Variation and potential problems are reported to supervisor/manager according to enterprise guidelines.

Variable	**Range**
Sourced	• End-users • Customers or stakeholders
Legislated requirements	• Verification of product quality as part of consumer legislation or specific legislation related to product content or composition.
Safety procedures.	• Use of tools and equipment for fabrication/production/ manufacturing works • Workplace environment and handling of material safety, • Following occupational health and safety procedures designated for the task • Respect the policies, regulations, legislations, rule and procedures for manufacturing/production/fabrication works

Evidence Guide	
Critical Aspect of Competence	Assessment requires evidence that the candidate: • Monitor quality of work • Establish quality specifications for product • Participate in maintaining and improving quality at work • Identify hazards and critical control points in the production of quality product • Assist in planning of quality assurance procedures • Report problems that affect quality • Implement quality assurance procedures
Underpinning Knowledge	Demonstrates knowledge of: • work and product quality specifications • quality policies and procedures

	• improving quality at work • hazards and critical points of operation • obtaining and using information • applying federal and regional legislation within day-today work activities • accessing and using management systems to keep and maintain accurate records • requirements for correct preparation and operation • technical writing
Underpinning Skills	Demonstrates skills in: • monitoring quality of work • establishing quality specifications for product • participating in maintaining and improving quality at work • identifying hazards and critical control points in the production of quality product • assisting in planning of quality assurance procedures • reporting problems that affect quality • implementing quality assurance procedures
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Develop Individuals and Team**
Unit Code	**IND PGS4 24 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to determine individual and team development needs and facilitate the development of the workgroup.

Elements	Performance Criteria
1. Provide team leadership	1.1 ***Learning and development needs*** are systematically identified and implemented in line with ***organizational requirements***. 1.2 Learning plan to meet individual and group training and developmental needs is collaboratively developed and implemented. 1.3 Individuals are encouraged to self-evaluate performance and identify areas for improvement. 1.4 ***Feedback on performance*** of team members is collected from relevant sources and compared with established team learning process.
2. Foster individual and organizational growth	2.1 Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of competence standards. 2.2 ***Learning delivery methods*** are made appropriate to the learning goals, the learning style of participants and availability of equipment and resources. 2.3 Workplace learning opportunities and coaching/ mentoring assistance are provided to facilitate individual and team achievement of competencies. 2.4 Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements.
3. Monitor and evaluate workplace learning	3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements. 3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support. 3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning. 3.4 Records and reports of competence are maintained within organizational requirement.
4. Develop team commitment and cooperation	4.1 Open communication processes to obtain and share information is used by team. 4.2 Decisions are reached by the team in accordance with its agreed roles and responsibilities. 4.3 Mutual concern and camaraderie are developed in the team.

5. Facilitate accomplishment of organizational goals	5.1 Team members are actively participated in team activities and communication processes. 5.2 Individual and joint responsibility is developed by teams members for their actions. 5.3 Collaborative efforts are sustained to attain organizational goals.

Variable	Range
Learning and development needs	• Coaching, monitoring and/or supervision • Formal/informal learning program • Internal/external training provision • Work experience/exchange/opportunities • Personal study • Career planning/development • Performance evaluation • Workplace skills assessment • Recognition of prior learning
Organizational requirements	• Quality assurance and/or procedures manuals • Goals, objectives, plans, systems and processes • Legal and organizational policy/guidelines and requirements • Safety policies, procedures and programs • Confidentiality and security requirements • Business and performance plans • Ethical standards • Quality and continuous improvement processes and standards
Feedback on performance	• Formal/informal performance evaluation • Obtaining feedback from supervisors and colleagues • Obtaining feedback from clients • Personal and reflective behavior strategies • Routine and organizational methods for monitoring service delivery
Learning delivery methods	• On the job coaching or monitoring • Problem solving • Presentation/demonstration • Formal course participation • Work experience and involvement in professional networks • Conference and seminar attendance

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • identify and implement learning opportunities for others • give and receive feedback constructively • facilitate participation of individuals in the work of the team • negotiate plans to improve the effectiveness of learning • prepare learning plans to match skill needs • access and designate learning opportunities
Underpinning Knowledge and Attitude	Demonstrates knowledge of: • coaching and monitoring principles

	• how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective • how to facilitate team development and improvement • methods and techniques to obtain and interpreting feedback • methods for identifying and prioritizing personal development opportunities and options • career paths and competence standards in the industry
Underpinning Skills	Demonstrates skills in: • reading and understanding a variety of texts, preparing general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management • communication including receiving feedback and reporting, maintaining effective relationships and conflict management • planning skills to organize required resources and equipment to meet learning needs • coaching and mentoring skills to provide support to colleagues • reporting to organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes • facilitation to conduct small group training sessions • relating to people from a range of social, cultural, physical and mental backgrounds
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Utilize Specialized Communication Skills**
Unit Code	**IND PGS4 25 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to use specialized communication skills to meet specific needs of internal and external clients, conduct interviews, facilitate group discussions, and contribute to the development of communication strategies.

Elements	Performance Criteria
1. Meet common and specific communication needs of clients and colleagues	1.1 Specific communication needs of clients and colleagues are identified and met. 1.2 Different approaches are used to meet communication needs of clients and colleagues. 1.3 Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization.
2. Contribute to the development of communication strategies	2.1 ***Strategies*** for internal and external dissemination of information are developed, promoted, implemented and reviewed as required. 2.2 Channels of communication are established and reviewed regularly. 2.3 Coaching in effective communication is provided. 2.4 Work related network and relationship are maintained as necessary. 2.5 Negotiation and conflict resolution strategies are used where required. 2.6 Communication with clients and colleagues is appropriate to individual needs and organizational objectives.
3. Represent the organization	3.1 When participating in internal or external fora, presentation is relevant, appropriately researched and presented in a manner to promote the organization. 3.2 Presentation is made clear and sequential and delivered within a predetermined time. 3.3 Appropriate media is utilized to enhance presentation. 3.4 Differences in views are respected. 3.5 Written communication is made consistent with organizational standards. 3.6 Inquiries are responded in a manner consistent with organizational standard.
4. Facilitate group discussion	4.1 Mechanisms which enhance ***effective group interaction*** are defined and implemented. 4.2 Strategies which encourage all group members to participate are used routinely. 4.3 Objectives and agenda are routinely set and followed for meetings

	and discussions. 4.4 Relevant information are provided to group to facilitate outcomes. 4.5 Evaluation of group communication strategies is undertaken to promote participation of all parties. 4.6 Specific communication needs of individuals are identified and addressed.
5. Conduct interview	5.1 A range of appropriate communication strategies are employed in ***interview situations***. 5.2 Different ***types of interview*** are conducted in accordance with the organizational procedures. 5.3 Records of interviews are made and maintained in accordance with organizational procedures. 5.4 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated.

Variable	**Range**
Strategies	• Recognizing own limitations • Utilizing techniques and aids • Providing written drafts • Verbal and non-verbal communication
Effective group interaction	• Identifying and evaluating what is occurring within an interaction in a non-judgmental way • Using active listening • Making decision about appropriate words, behavior • Putting together response which is culturally appropriate • Expressing an individual perspective • Expressing own philosophy, ideology and background and exploring impact with relevance to communication
Interview situations	• Establish rapport • obtain facts and information • Facilitate resolution of issues • Develop action plans • Diffuse potentially difficult situation
Types of Interview	• Related to staff issues • Routine • Confidential • Evidential • Non-disclosure and Disclosure

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate to: • Demonstrate effective communication skills with clients and work colleagues accessing service • Adopt relevant communication techniques and strategies to meet client particular needs and difficulties

Underpinning Knowledge and Values	Demonstrates knowledge of: • communication process • dynamics of groups and different styles of group leadership • communication skills relevant to client groups
Underpinning Skills	Demonstrates skills of: • full range of communication techniques including: ➢ active listening ➢ feedback ➢ interpretation ➢ role boundaries setting ➢ negotiation ➢ establishing empathy ➢ communication strategies • communication required to fulfill job roles as specified by the organization
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Manage and Maintain Small/Medium Business Operations**
Unit Code	**IND PGS4 26 0613**
Unit Descriptor	This unit covers the operation of day-to-day business activities in a micro or small business. The strategies involve developing, monitoring and managing work activities and financial information, developing effective work habits, and adjusting work schedules as needed.

Elements	Performance Criteria
1. Identify daily work requirements	1.1 Work requirements are identified for a given time period by taking into consideration ***resources*** and constraints. 1.2 Work activities are prioritized based on business needs, requirements and deadlines. 1.3 If appropriate, work is allocated to relevant staff or contractors to optimize efficiency.
2. Monitor and manage work	2.1 People, resources and/or equipment are coordinated to provide optimum results. 2.2 Staff, clients and/or contractors are communicated within a clear and regular manner, to monitor work in relation to ***business goals*** or timelines. 2.3 ***Problem solving techniques*** are applied to work situations to overcome difficulties and achieve positive outcomes.
3. Develop effective work habits	3.1 Work and personal priorities are identified and a balance is achieved between competing priorities using appropriate ***time management strategies***. 3.2 Input from ***internal and external sources*** is sought and used to develop and refine new ideas and approaches. 3.3 Business or inquiries is/are responded to promptly and effectively. 3.4 Information is presented in a format appropriate to the industry and audience.
4. Interpret financial information	4.1 Relevant documents and reports are identified. 4.2 Documents and reports are read and understood and any implications discussed with appropriate persons. 4.3 Data and numerical calculations are analyzed, checked, evaluated, organized and reconciled. 4.4 Daily financial records and cash flow are maintained correctly and in accordance with legal and accounting requirements. 4.5 Invoices and payments are prepared and distributed in a timely manner and in accordance with legal requirements. 4.6 Outstanding accounts are collected or followed-up on.

5. Evaluate work performance	5.1 Opportunities for improvements are monitored according to business demands. 5.2 Work schedules are adjusted to incorporate necessary modifications to existing work and routines or changing needs and requirements. 5.3 Proposed changes are clearly communicated and recorded to aid in future planning and evaluation. 5.4 Relevant codes of practice are used to guide an ethical approach to workplace practices and decisions.

Variable	**Range**
Resources	may include: • staff • money • time • equipment • space
Business goals	may include: • sales targets • budgetary targets • team and individual goals • production targets • reporting deadlines
Problem solving techniques	may include: • gaining additional research and information to make better informed decisions • looking for patterns • considering related problems or those from the past and how they were handled • eliminating possibilities • identifying and attempting sub-tasks • collaborating and asking for advice or help from additional sources
Time management strategies	may include: • prioritizing and anticipating • short term and long term planning and scheduling • creating a positive and organized work environment • clear timelines and goal setting that is regularly reviewed and adjusted as necessary • breaking large tasks into smaller tasks • getting additional support if identified and necessary
Internal and external sources	may include: • staff and colleagues • management, supervisors, advisors or head office • relevant professionals such as lawyers, accountants, management consultants • professional associations

Evidence Guide	
Critical Aspects of Competence	A person must be able to demonstrate: • ability to identify daily work requirements and allocate work appropriately • ability to interpret financial documents in accordance with legal requirements
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Federal and Local Government legislative requirements affecting business operations, especially in regard to Occupational Health and Safety (OHS), equal employment opportunity, industrial relations and anti-discrimination • technical or specialist skills relevant to the business operation • relevant industry code of practice • planning techniques to establish realistic timelines and priorities • identification of relevant performance measures • quality assurance principles and methods • relevant marketing, management, sales and financial concepts • methods for monitoring performance and implementing improvements • structured approaches to problem solving, idea management and time management
Underpinning Skills	Demonstrate skills to: • interpret legal requirements, company policies and procedures and immediate, day-to-day demands • communication skills including questioning, clarifying, reporting, and giving and receiving constructive feedback • numeracy skills for performance information, setting targets and interpreting financial documents and reports • technical and analytical skills to interpret business document, reports and financial statements and projections • ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • problem solving skills to develop contingency plans • using computers and software packages to record and manage data and to produce reports • evaluation skills for assessing work and outcomes • observation skills for identifying appropriate people, resources and to monitor work
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Printing and Graphic Arts Supervision Level IV	
Unit Title	**Apply Problem Solving Techniques and Tools**
Unit Code	**IND PGS4 27 0613**
Unit Descriptor	This unit of competency covers the knowledge, skills and attitude required to apply scientific problem solving techniques and tools to enhance quality, productivity and other kaizen elements on continual basis.

Elements	Performance criteria
1. Identify and select theme/problem.	1.1 ***Safety requirements*** are followed in accordance with safety plans and procedures. 1.2 All possible problems related to the process /Kaizen elements are listed using ***statistical tools and techniques***. 1.3 All possible problems related to kaizen elements are identified and listed on Visual Management Board/Kaizen Board. 1.4 Problems are classified based on obviousness of cause and action. 1.5 Critical factors like the number of customers affected, Potentials for bottlenecks, and number of complaints etc… is selected. 1.6 Problems related to priorities of ***Kaizen Elements*** are given due emphasis and selected.
2. Grasp current status and set goal.	2.1 The extent of the problem is defined. 2.2 Appropriate and achievable goal is set.
3. Establish activity plan.	3.1 The problem is confirmed. 3.2 High priority problem is selected. 3.3 The extent of the problem is defined. 3.4 Activity plan is established as per ***5W1H***.
4. Analyze causes of a problem.	4.1 All possible causes of a problem are listed. 4.2 Cause relationships are analyzed using***4M1E***. 4.3 Causes of the problems are identified. 4.4 Root causes are selected. 4.5 The root cause which is most directly related to the problem is selected. 4.6 All possible ways are listed using ***creative idea generation*** to eliminate the most critical root cause. 4.7 The suggested solutions are carefully tested and evaluated for potential complications. 4.8 Detailed summaries of the action plan are prepared to implement the suggested solution.
5. Examine countermeasures and their implementation.	5.1 Action plan is implemented by ***medium KPT*** members. 5.2 Implementation is monitored according to the agreed procedure and activities are checked with pre-set plan.

6. Assess effectiveness of the solution.	6.1 ***Tangible and intangible results*** are identified. 6.2 The results are verified over time. 6.3 Tangible results are compared with targets using ***various types of diagram***.
7. Standardize and sustain operation.	7.1 If the goal is achieved, the new procedures are standardized and made part of daily activities. 7.2 All employees are trained on the new ***Standard Operating Procedures (SOPs)***. 7.3 SOP is verified and followed by all employees. 7.4 The next problem is selected to be tackled by the team.

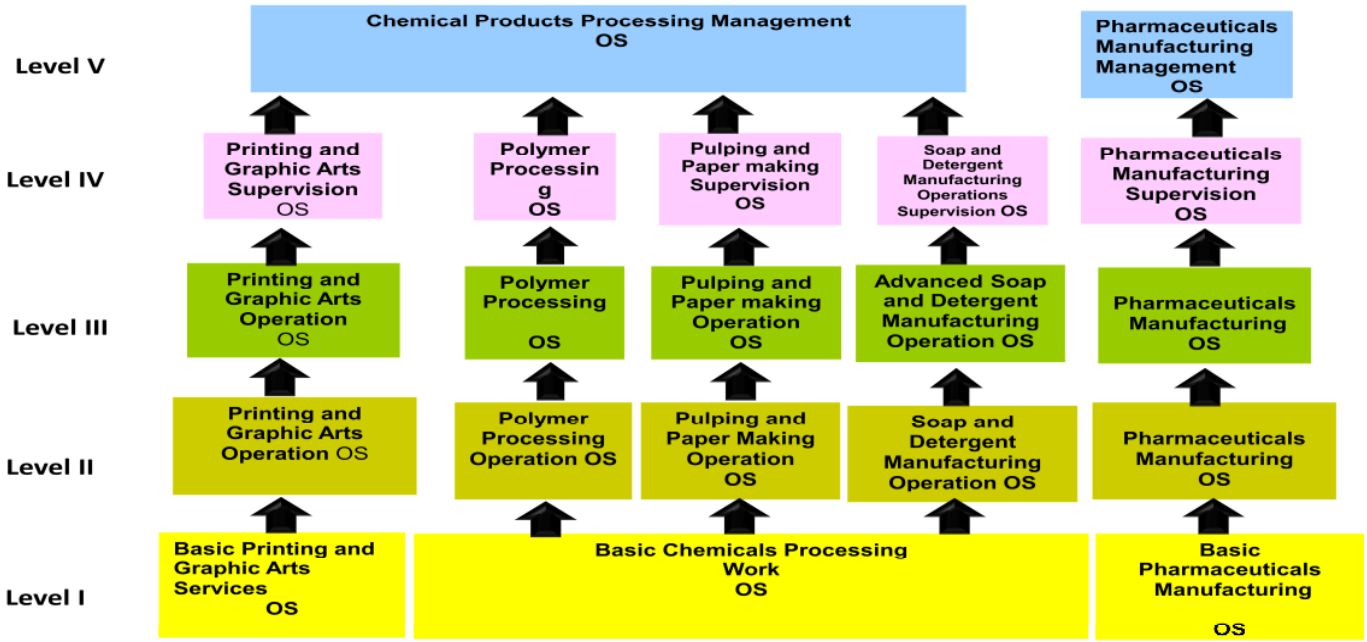
Variables	**Range**
Safety requirements	may include but not limited to: • OHS requirements include legislation, material safety, managements system, hazardous substances and dangerous goods code and local safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislations, relevant health regulation, manual handling procedure and organization insurance requirements
Statistical tools and techniques	may include but not limited to: • 7 QC tools may include: ➢ Stratification ➢ Pareto Diagram ➢ Cause and Effect Diagram ➢ Check Sheet ➢ Control Chart/Graph ➢ Histogram ➢ Scatter Diagram • QC techniques may include: ➢ Brain storming ➢ Why analysis ➢ What if analysis ➢ 5W1H
Kaizen Elements	may include but not limited to: • Quality • Cost • Productivity • Delivery • Safety • Moral • Environment • Gender equality
5W1H	may include but not limited to: • Who: person in charge • Why: objective

	• What: item to be implemented • Where: location • When: time frame • How: method
4M1E	may include but not limited to: • Man • Machine • Method • Material and • Environment
Creative idea generation	may include but not limited to: • Brainstorming • Exploring and examining ideas in varied ways • Elaborating and extrapolating • Conceptualizing
Medium KPT	may include but not limited to: • 5S • 4M (machine, method, material and man) • 4P (Policy, procedures, People and Plant) • PDCA cycle • Basics of IE tools and techniques
Tangible and intangible results	may include but not limited to: • Tangible result may include: ➢ Quantifiable data • Intangible result may include: ➢ Qualitative data
Various types of diagram	may include but not limited to: • Line graph • Bar graph • Pie-chart • Scatter diagram • Affinity diagram
Standard Operating Procedures (SOPs)	may include but not limited to: • The customer demand • The most efficient work routine (steps) • The cycle times required to complete work elements • All process quality checks required to minimize defects/errors • The exact amount of work in process required

Evidence Guide	
Critical Aspects of Assessment	Demonstrates skills and knowledge competencies to: • Apply all relevant procedures and regulatory requirements to ensure quality and productivity of an organization. • Detect non-conforming products/services in the work area • Apply effective problem solving approaches/strategies. • Implement and monitor improved practices and procedures • Apply statistical quality control tools and techniques.

Underpinning Knowledge and Attitude	Demonstrates knowledge of: • QC story/PDCA cycle/ • QC story/ Problem solving steps • QCC techniques • 7 QC tools • Basic IE tools and techniques. • SOP • Quality requirements associated with the individual's job function and/or work area • Workplace procedures associated with the candidate's regular technical duties • Relevant health, safety and environment requirements • organizational structure of the enterprise • Lines of communication • Methods of making/recommending improvements. • Reporting procedures
Underpinning Skills	Demonstrates skills to: • Apply problem solving techniques and tools • Apply statistical analysis tools • Apply Visual Management Board/Kaizen Board. • Detect non-conforming products or services in the work area • Document and report information about quality, productivity and other kaizen elements. • Contribute effectively within a team to recognize and recommend improvements in quality, productivity and other kaizen elements. • Implement and monitor improved practices and procedures. • Organize and prioritize activities and items. • Read and interpret documents describing procedures • Record activities and results against templates and other prescribed formats.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Sector: Industry
Chemical Products Manufacturing



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This occupational standard was developed on May 2013 at Ethiopian Management Institute (EMI), Debre Zeyit.

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