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OFFSET PRINTING MACHINE OPERATOR

Learner Guide

National Vocational
Certificate Level 2

Version 1 - September 2018



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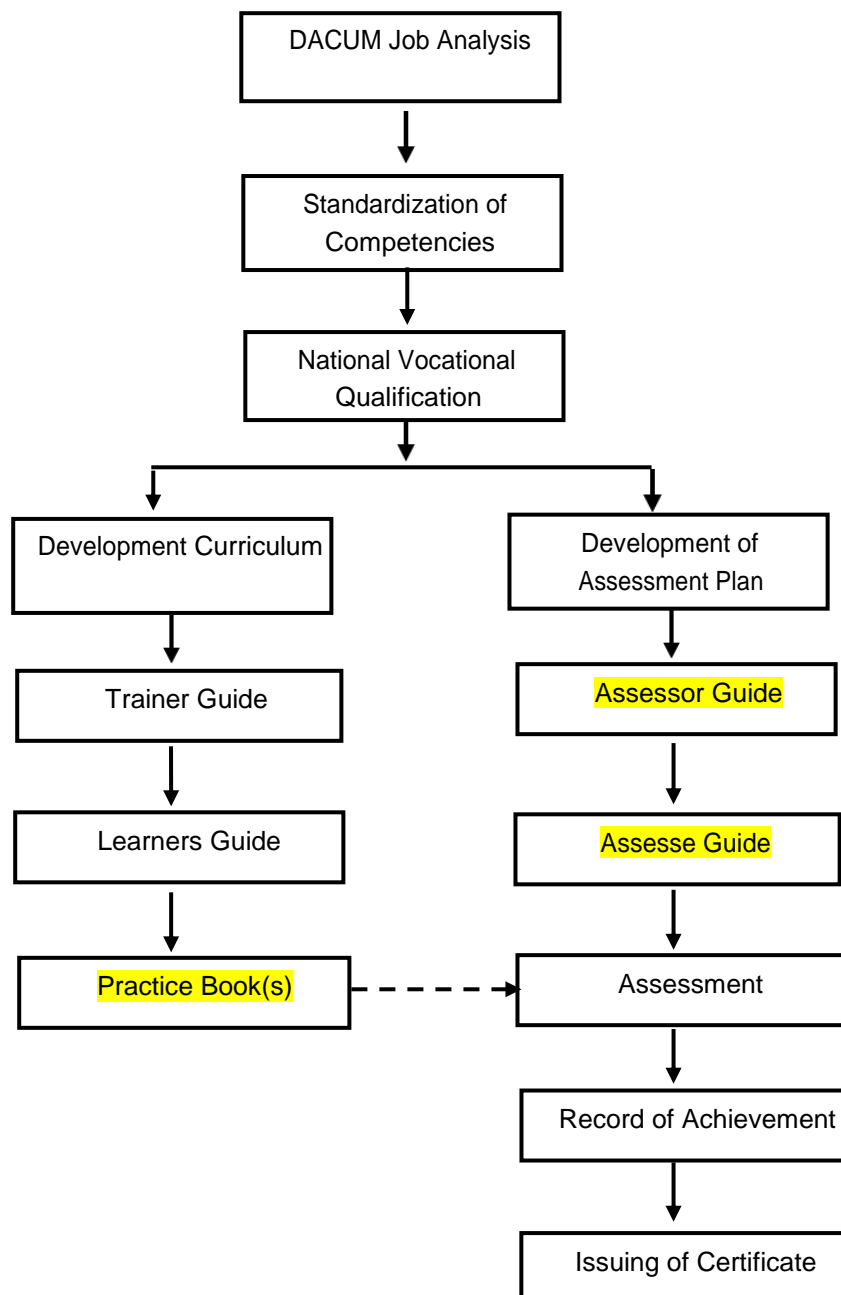
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INTRODUCTION

This Guide supports the Competency-Based Training Curricula that will enable the trainees to achieve the competency standards that have been set by the relevant industry group.

The NVQF Competency-Based Training Curricula along with the associated Training Guides and the Assessment Guides are all developed from the skill competency standards established by Qualification Development Committee (QDC).

Below figure outlines the process of developing the competencies, curriculum, assessment requirements, delivering the training program and the assessments guide to certify achievement of the competencies.



The Trainer’s Guide provides guidelines and instructions to Trainers on the approaches that are required and on the organization and delivery of the curriculum training program.

Curriculum

The Curriculum Manual is included in the Training and Learning Materials Package.

The curriculum is organized as a series of modules. Each module is broken down into a series of Learning Units. Each Learning Unit includes Learning Outcomes, Learning Elements, an estimate of the time needed, a list of tools, equipment and consumable materials required and the location for learning to take place.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials needed	Location

Lesson Plans

The Trainer will need to develop a coherent set of lesson plans for each module of the curriculum. This Guide includes a Lesson Plan Template. The Lesson Plans must be filed for later review if necessary.

Assessment

It is necessary to assess the knowledge, skills and attitude of the trainees at the completion of each module.

(See the Assessment Guide for further details)

Evaluation of Training Material

Trainers are invited to evaluate the Training Materials based on their experience of training delivery. A template is provided for assistance of trainer.

EVALUATION OF TRAINING MATERIAL

The trainers/instructors who implement this training material can inform NAVTTC/ Provincial TEVTAs promptly regarding any shortcomings in training material on the following format. Please consider it as one of your responsibilities.

Format

Trade:			
Training Material	Module Title & Module Code	Learning Unit Title & Learning Unit Code	Suggested amendments/ feedback/proposal
Trainer Guide			
Learner Guide			
Practice Book			
Trainer Name:		Training Centre:	
Signature of Trainer:		Date:	

LESSON PLANS

Dear Instructors/Trainers,

Model Lesson Plans for one module have been provided in this trainer's guide. A format and guidelines for writing Lesson Plans have also been provided in the succeeding pages. You are advised to prepare your own lesson plans for the remaining Learning Units using the suggested format and guidelines.

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Module-A

Lesson Plan – 1

Module: A	Perform Pre run Maintenance		
Learning Unit: 1-1	Perform cleaning in press room		
Learning Outcomes	<p>At the end of the session the learners will be able to:</p> <ul style="list-style-type: none"> • Perform daily cleaning of printing machine surrounding as per press room SOPs, • Perform cleaning of the machine as per OEM manual, • Perform cleaning of associated tools as per press room SOPs. • Perform periodic cleaning as per duty chart. 		
Methods	Key Notes	Media	Time
Introduction			
Lecture	<p>Introduce the Learning Unit.</p> <p>Motivate the learners to create interest.</p> <p>Enlist the Learning Elements:</p> <ul style="list-style-type: none"> • State history and types of printing • List main parts of offset printing machine • Importance of tidiness in press room • Describe method of cleaning in press • List work place cleaning equipment • List work place cleaning consumable 	Multimedia/ White board	30 min
Main Body			
Lecture -do- Group discussion	<p>Brief learners about methods of cleaning of printing machine/press room</p> <p>Explain types of printing and history of printing. Describe main parts of offset printing machine, Describe the importance and methods of tidiness in press room List work place cleaning equipment and consumable</p>	Learner Guide/ Projector/ White board	220 min

Field visit	Conduct a visit to press workshop		30 min
Group practice	Allow the learners to clean the press room in groups		60 min
Conclusion			
Lecture	Summarize the lesson by reviewing important facts.		20 min
Question and Answers	Ask questions to ensure that the learners acquired relevant knowledge.		
Total time:			06 hrs

Lesson Plan -2			
Module: A	Perform Pre run Maintenance		
Learning Unit: 1-2	Maintain oil level		
Learning Outcomes			
At the end of the session the learners will be able to:			
<ul style="list-style-type: none"> • Compare the quality of oil in machine with quality recommended in machine manual • Maintain oil level as per machine specifications 			
Methods	Key Notes	Media	Time
Introduction			
Lecture	<p>Introduce the Learning Unit.</p> <p>Motivate the learners to create interest.</p> <p>Enlist the Learning Elements:</p> <ul style="list-style-type: none"> • Define viscosity • quality of oil in machine and its usage • define oil grading system in printing machine • discuss capacity of oil tank in printing machine 	Visuals/ White board	20 min
Main Body			
Lecture -do- Group discussion Lecture	<p>Describe the importance of oil in printing machine to the learners.</p> <p>Describe role of viscosity,</p> <p>Give disadvantage of using low quality oil in machine,</p> <p>Explain capacity of oil tank in printing machine,</p> <p>Give detail of oil grading system in printing machine,</p> <p>Explain reasons to maintain oil level in machines.</p> <p>Discuss the impact of using low quality of oil.</p>	Learner Guide/ Projector/ White board	140 min
Conclusion			
Lecture	Summarize the lesson by reviewing important facts.		20 min
Question and Answers	Ask questions to ensure that the learners acquired relevant knowledge.		
Total time:			03 hrs

Lesson Plan – 3			
Module: A	Perform Pre run Maintenance		
Learning Unit: 1-3	Inch printing machine		
Learning Outcomes			
At the end of the session the learners will be able to:			
<ul style="list-style-type: none"> • Perform inching procedure on printing machine as per SOPs, • Verify inching through test print. 			
Methods	Key Notes	Media	Time
Introduction			
Lecture	Introduce the Learning Unit. Motivate the learners to create interest. Enlist the Learning Elements: <ul style="list-style-type: none"> • Knowledge of inching • Importance of inching • Procedure of inching 	Visuals/ White board	20 min
Main Body			
Lecture -do- -do- Demonstration	Describe about inching to the learners. State the importance of inching Explain effects of avoiding inching. Describe the procedure of inching on offset printing machine. Demonstrate the procedure of inching	Learner Guide/ Projector/ White board	190 min

Conclusion			
Lecture	Summarize the lesson by reviewing important facts.		30 min
Question and Answers	Ask questions to ensure that the learners acquired relevant knowledge.		
Total time:			04 hrs

Lesson Plan – 4			
Module: A	Perform Pre run Maintenance		
Learning Unit: 1-4	Record humidity in press room		
Learning Outcomes			
At the end of the session the learners will be able to:			
<ul style="list-style-type: none"> • Verify humidity of press room as per press room SOPs, • Apply humidity management techniques in press room. 			
Methods	Key Notes	Media	Time
Introduction			
Lecture	Introduce the Learning Unit. Motivate the learners to create interest. Enlist the Learning Elements: <ul style="list-style-type: none"> • Definition of humidity • importance of manage humidity in press room environment • Techniques/methods to manage humidity in press room 	Visuals / White board	20 min
Main Body			
Lecture -do- Group discussion	Describe about humidity in press room to the learners. Explain importance of manage humidity in press room environment, Discuss techniques/methods to manage humidity in press room	Learner Guide/ Projector	90 min

Conclusion			
Lecture	Summarize the lesson by reviewing important facts.		10 min
Question and Answers	Ask questions to ensure that the learners acquired relevant knowledge.		
Total time:			02 hrs

GUIDELINES FOR WRITING LESSON PLAN

The template for lesson plan has been provided at next page. These guidelines are for trainers, to write their own lesson plans as follows:

1. Introduce yourself and the Learning Unit, and state the Learning Outcomes of the session clearly to activate attention of learners.
2. In **Introduction** part of the lesson plan, state the Learning Objectives of the lesson. This allows the learners to organize their thoughts on what they will learn and to perform. Also state some questions to recall prior knowledge of learners to arouse their interest and motivation.
3. In **Body** part of the lesson plan, present the new information or material that is to be learned. Demonstration of a skill relevant with the Learning Unit is also stated here. Also mention the teaching and learning methods for each learning element from *Trainer Guidelines*, the relevant media e.g. handouts, practice book, power-point slides, videos, white board and time duration for each activity in the relevant columns.
4. In **Conclusion** part, list the strategies used for summarizing and reviewing the lesson delivered. Also mention the strategies for formative assessment to ensure that the transfer of knowledge and skill has been achieved.

FORMAT FOR LESSON PLAN

Module			
Learning Unit			
Learning Outcomes			
<input type="checkbox"/> <input type="checkbox"/>			
Methods	Key Notes	Media	Time
Introduction			
Main Body			
Conclusion			
			Total time:

DEMONSTRATION OF SKILL

Demonstration or modelling a skill is a powerful tool which is used in vocational training. For any practical demonstration, it is important for a Trainer to follow the given instructions:

1. Trainer must be competent enough and practice the skill before demonstration to learners, if possible.
2. Arrange the required tool, equipment and consumables.
3. Introduce the competence to learners clearly at start of the demonstration.
4. Explain how the skill relates with the skill(s) already acquired and describe the expected results or show the objects to learners.
5. Ensure that all the learners are attentive at the time of practical demonstration.
6. Carry out demonstration in a way visible to learners.
7. Perform each step slowly and speak out loudly so that all learners can hear and understand.
8. During the demonstration, guide the learners individually, whenever needed.
9. Mention critical/complex steps and ensure safety precautions
10. Explain theoretical knowledge where applicable and ask questions to learners to check their learning skills.
11. Repeat critical steps in demonstration, if required.
12. Summarize the demonstration and discuss the result of demonstration.

OVERVIEW OF PROGRAM

Course: Assistant Offset Printing Machine Operator

Total Duration: 400 hrs

Course Overview:

The purpose of this training program is to develop skills of those learners who want to pursue their careers in offset printing industry. After successful completion of the qualification the assistant offset printing machine operator can work in printing press to perform pre-print, print, post print operations with safety and documentation on offset machine.

Module	Learning Units	Theory hours	Workplace hours
A- Perform pre-run maintenance	LU-1-1 Perform cleaning in press room LU-1-2 Maintain oil level LU-1-3 Inch printing machine LU-1-4 Record humidity in press room	15 Hrs	60 Hrs
B- Interpret printing instructions on docket	LU-2-1 Determine job order details LU-2-2 Verify plates as per job requirement LU-2-3 Verify material quality LU-2-4 Verify substrate sizing LU-2-5 Verify artwork	10 Hrs	30 Hrs
C- Make ready print	LU-3-1 Perform machine feed LU-3-2 Mount printing plates on plate cylinder LU-3-3 Adjust machine sidelay LU-3-4 Adjust machine head-lay LU-3-5 Adjust machine feeder LU-3-6 Adjust paper delivery LU-3-7 Adjust cylinders impression LU-3-8 Perform paper run	10 Hrs	70 Hrs



D-Perform Print run	LU-4-1 Maintain balance between ink and water. LU-4-2 Manage dot gain LU-4-3 Maintain registration LU-4-4 Control Delta E values / variation	10 Hrs	30 Hrs
E-Perform Post production activities	LU-5-1 Perform ink rollers cleaning LU-5-2 Wash printing plates LU-5-3 Wash printing Blanket LU-5-4 Clean impression cylinder LU-5-5 Wash dampening rollers LU-5-6 Perform ink knives cleaning	10 Hrs	70 Hrs
F- Complete Documentation Requirements	LU-6-1 Document work time LU-6-2 Document information LU-6-3 Maintain machine log	20 Hrs	20 Hrs
G- Adhere to Safety Standards and Regulations	LU-7-1 Identify hazards in printing press environment LU-7-2 Comply with Occupational Health and Safety (OHS)precautions LU-7-3 Use Personal Protective Equipment(PPE) LU-7-4 Practice safe work habits to ensure safety in the printing environment LU-7-5 Demonstrate firefighting skills	10 Hrs	35 Hrs

TRAINER'S GUIDELINE

Module-A: Perform pre-run maintenance

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU-1-1 Perform cleaning in press room	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Describe history and types of printing, • Define main parts of offset printing machine, • Describe the importance of tidiness in press room, • Describe method of cleaning in press, • Engage learners to make the lists of work place cleaning equipment & consumable. <p>Arrange visit of trainees to the workshop</p> <p>Show parts of offset printing machine to the trainees</p>	Classroom Press room lab/ industry	Learner's Guide/ Hand Outs
LU-1-2 Maintain oil level	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Define viscosity, • Determine capacity of oil tank in printing machine, • Define oil grading system in printing machine, • List reasons to maintain oil level in machines. <p>Group discussion on disadvantages of use of not recommended grade oil (as per manual) in machine.</p>	Classroom -do- -do-	Learner's Guide/Hand Outs Visuals

Practical Activity:

	Perform Pre-run Maintenance	
Module: A	Learning Unit: 1-1	Perform Cleaning in Press Room
	Practical Description:	Perform daily cleaning of printing surrounding as per press SOP
Time:	5 hours	
Equipment	Offset printing machine	
Tools	N/A	
PPE	Proper dress, safety shoes, safety gloves	
Materials	Cleaning Cloth, Cleaning brush, Dust bin	
Key Point	A clean workplace ensures the safety and health of employees and visitors.	
Learning Outcome:	Perform daily cleaning of printing surrounding as per press SOPs	
Precautions:	Ensure to wear safety shoes and other safety equipment before starting this process	
Instructions		Illustrations
1. Inspect entire surrounding areas of printing machine thoroughly		
2. Clean floor of surrounding areas of the machine with brush		

3. Use cloth to clean oil leakage



2. Re-inspect the whole surrounding area and make sure that it has been cleaned properly





3. Dispose of used article and place the brush at its respective place



4. Wash your hands properly with soap/detergent



Practical Activity:

Perform Pre-run Maintenance	
Module: A	Learning Unit: 1-1
	Perform Cleaning in Press Room
Practical Description:	Perform cleaning of the machine as per OEM manual
Time:	5 hours
Equipment	Offset printing machine
Tools	Ink scrapper, Cleaning Brush
PPE	Proper dress code, Safety gloves, safety shoes
Materials	Plate cleaner, Roller cleaner, IPA, Sponge, Kerosene oil, Cleaning rags/cloth, Dust bin
Key Point	Avoid use of kerosene oil on rollers, plate cylinder and impression cylinder
Learning Outcome:	Perform cleaning of the machine as per OEM manual
Precautions:	Ensure to wear safety shoes and other safety equipment before starting this process
Instructions	Illustrations
1. Take clean cloth/cotton rags	
2. Put cleaning agent on the cloth	

3. Clean the machine gently with wet cloth



4. Inspect machine and make sure that no space or part remain unclean.





5. Dispose of the used cloth in a dust bin







6. Wash your hands properly with soap/detergent






Practical Activity:

		Perform Pre-run Maintenance	
Module: A	Learning Unit: 1-1	Perform Cleaning in Press Room	
	Practical Description:	Perform cleaning of associated tools as per press room SOPs	
Time:	5 hours		
Equipment	Offset printing machine		
Tools	Cleaning Brush		
PPE	Proper dress code, Safety gloves, Safety shoes		
Materials	Cloth, Cleaning agent		
Key Point	If you take care of and store the tools properly, they will last a lifetime.		
Learning Outcome:	Perform cleaning of associated tools as per press room SOPs		
Precautions:	Ensure to wear safety shoes and other safety equipment before starting this process		
Instructions		Illustrations	
1. Arrange all used tools in order			
2. Pick tools one by one, and clean it with cloth and cleaning solvent thoroughly.			

<p>3. Place clean tools to its respective place</p>	
<p>4. Dispose of used articles in dustbin.</p>	
<p>5. Place unused cloth and solvent agents to their respective places</p>	
<p>6. Wash your hands properly with soap/detergent</p>	

Practical Activity:

		Perform Pre-run Maintenance	
Module: A	Learning Unit: 1-1	Perform Cleaning in Press Room	
	Practical Description:	Perform periodic cleaning as per duty chart	
Time:	5 hours		
Equipment	Offset printing machine		
Tools	N/A		
PPE	Safety gloves, safety shoes		
Materials	Cloth, Cleaning agent, Cleaning brush		
Key Point	A clean workplace ensures the safety and health of employees and visitors.		
Learning Outcome:	Perform periodic cleaning as per duty chart		
Precautions:	Ensure to wear safety shoes and other safety equipment before starting this process		
Instructions		Illustrations	
1. Inspect entire surrounding areas of machine thoroughly			
2. Clean floor of surrounding areas of the machine with brush			
3. use cloth to clean oil leakage			

4. Re-inspect the whole surrounding area and make sure that it has been cleaned properly



5. Dispose of used article and place the brush at its respective place



6. Take clean cloth\ cotton rags.



7. Clean the machine gently with wet cloth



8. Inspect machine and make sure that no space or part remain unclean



9. Dispose of the used cloth in a dustbin



10. Arrange all used tools in order



11. Pick tools one by one, and clean it with cloth and cleaning solvent thoroughly.



12. Place clean tools to its respective place.



13. Dispose of used articles in dustbin



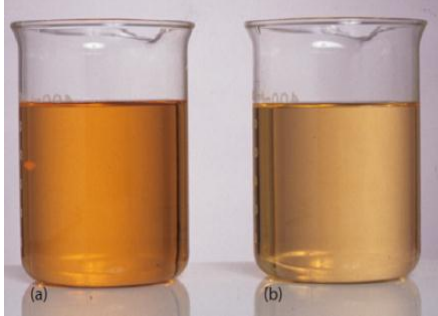

14. Place unused cloth and solvent agents to their respective places



15. Wash your hands properly with soap/detergent



Practical Activity:

Module: A	Perform pre-run maintenance	
	Learning Unit: 1-2	Maintain oil level
	Practical Description:	Compare quality of oil in machine with quality recommended in machine manual:
Time:	7 hours	
Equipment	Offset printing machine	
Tools	Funnel, Spanner set, Allen Key set	
PPE	Proper dress, Safety shoes, safety gloves	
Materials	Standard oil, substandard oil, OEM manual	
Key Point	Always use good quality oil	
Learning Outcome:	Compare quality of oil in machine with quality recommended in machine manual	
Precautions:	Usage of Kerosene oil is prohibited in printing machine. It harms plate, roller, blanket and dampening system.	
Instructions		Illustrations
1. Put both oils in separate beakers and check the viscosity of both oils		
2. Check the lubrication of both oils		

3. And finally put the standard oil in the machine oil tank.





4. Remove the substandard oil.



5. Then wash hands carefully with soap/detergent



Practical Activity:

		Perform Pre-run Maintenance	
Module: A	Learning Unit: 1-2	Maintain Oil Level	
	Practical Description:	Maintain oil level as per machine specifications	
Time:	7 hours		
Equipment	Offset printing machine		
Tools	Funnel, Spanner set, Allen key set		
PPE	Proper dress, safety shoes, safety gloves		
Materials	Lubricant Oil, cloth, OEM manual		
Key Point	Always use good quality oil in Machine		
Learning Outcome:	Maintain oil level as per machine specification		
Precautions:	Ensure safety		
Instructions		Illustrations	
1. Check the oil level of machine through magic eye			
2. Open the oil tank cap, fill the tank and check the oil level again carefully			


3. Clean the surrounding area of oil cap properly and dispose of the waste cloth


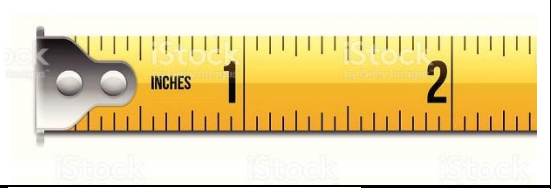




4. Wash hands properly





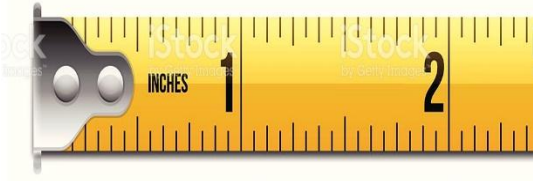

Practical Activity:

Module: A	Perform Pre-run maintenance	
	Learning Unit: 1-3	Inch Printing Machine
	Practical Description:	Perform inching procedure on printing machine as per SOP
Time:	8 hours	
Equipment	Offset printing machine	
Tools		
PPE	Proper dress, safety shoes, safety gloves	
Materials		
Key Point	Avoid inching can cause accident	
Learning Outcome:	The learner will be able to perform inching procedure as per SOPs	
Precautions:	Do not inch machine and wipe the cylinder at the same time	
Instructions		Illustrations
<p>1. Wear proper dress and shoes</p>		




<p>2. Switch on the machine</p>	
<p>3. Press inching button 1 inch only</p>	
<p>4. Check the machine, if any unusual sound is noticed, inform the supervisor immediately.</p>	
<p>5. If everything is ok then start printing</p>	

Practical Activity:



Module: A	Perform Pre-run maintenance	
	Learning Unit: 1-3	Inch Printing Machine
	Practical Description:	Verify inching through inch printing machine
Time:	8 hours	
Equipment	Offset Printing machine	
Tools		
PPE	Proper dress, safety shoes, safety gloves	
Materials		
Key Point	Avoid inching can cause accident	
Learning Outcome:	The learner will be able to verify inching	
Precautions:	Do not inch machine and wipe the cylinder at the same time	
Instructions		Illustrations
1. Wear proper dress and shoes.		
2. Switch on the machine		

<p>3. Press inching button 1 inch only</p>	 A yellow folding ruler is shown, partially unfolded. The ruler has black markings and numbers. The number '1' is clearly visible, indicating one inch. The word 'INCHES' is printed on the ruler. There are also faint 'iStock' watermarks on the ruler.
<p>4. If machine is working properly, then run the machine and take out test prints.</p>	 A large black checkmark is centered within a black circle. This is a common symbol for a checkmark or confirmation.

Practical Activity:

		Perform Pre-run Maintenance	
Module: A	Learning Unit: 1-4	Record humidity in press room	
	Practical Description :	Verify humidity of press room as per press room SOP's	
Time:	2 hours		
Equipment	Digital Humidity meter		
Tools	N/A		
PPE	Proper dress code, safety shoes		
Materials			
Key Point	The quality of printing improves due to proper humidity levels		
Learning Outcome:	Verify humidity of press room as per press room SOP		
Precautions:	Printing substrate should be packed properly		
Instructions		Illustrations	
1. Check the humidity of the press room			
2. If the humidity is in between 40 to 60, it is ideal for the printing press room			
3. If the humidity of the press room is less than 40, inform supervisor			

Practical Activity:

		Perform Pre-run Maintenance	
Module: A	Learning Unit: 1-4	Record humidity in press room	
	Practical Description:	Apply humidity management technique in press room	
Time:	5 hours		
Equipment	Digital Humidity meter		
Tools	-		
PPE	Proper dress code, safety shoes		
Materials	-		
Key Point	The quality of printing improves due to proper humidity levels		
Learning Outcome:	Apply humidity management technique in press room		
Precautions:	Printing substrate should be packed properly		
Instructions		Illustrations	
1. For comfort level printing, humidity must be from 40 to 60.			
2. Before start printing, check the humidity of press room through digital humidity meter.			
3. If humidity is less than the required standard, maintain the humidity level by adopting alternative means.			

4. Report to supervisor for desired requirements.



Module-B: Interpret Printing instructions on Docket			
Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU-2-1 Determine job order details	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Explain docket/job card and its importance • Enlist information available on docket/job card, • Describe shade card, • state importance of colour sequencing, • Describe applications of coatings, • List types of coatings used in offset printing. <p>Group discussions</p> <p>Individual practice</p>	Classroom	Learner's Guide/Hand Outs Multimedia
LU-2-2 Verify plates as per job requirement	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Describe traceability marks, • Explain and list types of printing plates, • Define dot percentage, • State precautions to be taken in printing plates handling. <p>Group discussions on handling printing plates</p> <p>Question answer sessions.</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	Learner's Guide/hand outs Multimedia

<p>LU-2-3 Verify material quality</p>	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Describe substrate for offset printing, • Define GSM values, • Explain effects of variation in GSM values, • State grain of substrate and determination method of substrate grain, <p>Discuss importance of maintaining viscosity of coatings. Group discussions.</p> <p>Question answer session.</p>	<p>Classroom</p> <p style="text-align: center;">-do- -do-</p>	<p>Learner's Guide/Hand Outs Multimedia</p>
<p>LU-2-4 Verify substrate sizing</p>	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Define method of checking substrate sizes, • Describe effect of size variation on substrate, • State substrate trimming procedure. <p>Individual Practice</p>	<p>Classroom</p> <p style="text-align: center;">-do-</p>	<p>Learner's Guide/Hand outs Multimedia</p>
<p>LU-2-5 Verify artwork</p>	<p>Teach the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Define artwork in printing industry. 	<p>Classroom</p>	<p>Learner's Guide/Hand outs Multimedia</p>

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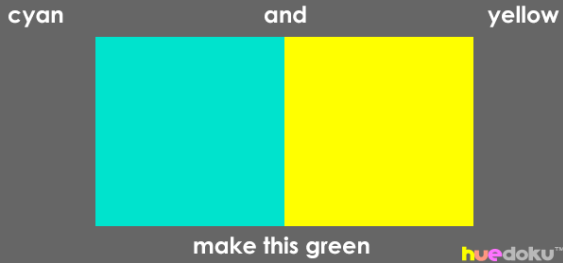

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Module-B

Practical Activity:

Module: B	Interpret Printing instructions on Docket	
	Learning Unit: 2-1	Determine Job order detail
	Practical Description:	Prepare Green color as per provided shade card
Time:	5 hours	
Equipment	N/A	
Tools	Spaggel (Scrapper), Glass sheet	
PPE	Proper dress code, safety shoes	
Materials	Process Ink, Roller Wash, Cleaning cloth, Paper sheet as per job card	
Key Point		
Learning Outcome:	Learner will be able to prepare color as per job card	
Precautions:	Ensure personal and environmental safety. Properly dispose of the cleaning cloth as per press room SOPs	
Instructions	Illustrations	
1. Mix Cyan in Yellow with the help of Spaggle (Scrapper)		
2. Take shade with finger or palm on specific paper to match with provided shade card.		

3. Ensure proper required light to observe color.





4. Perform cleaning of glass or tray on which you made the ink.



5. Wash your hands properly with soap.



Practical Activity:

		Interpret printing instructions on docket	
Module: B	Learning Unit: 2-2	Verify plates as per job requirements	
	Practical Description:	Perform verification of plate as per job card/docket	
Time:	5 hours		
Equipment	Plate reader		
Tools	Magnifying/Eye glass		
PPE	Proper dress code, safety shoes		
Materials	Printing plate as per given docket		
Key Point	Verify the plate		
Learning Outcome:	The learner will be able to check the plate		
Precautions:	Avoid rubbing and scratching from image area of printing plates		
Instructions		Illustrations	
1. Collect the desired printing plates			
2. Observe the plates with naked eye.			

3. Check the plate with the help of eye glass on the image area for any damage.



4. Check dot percentage with the help of plate reader



5. Replace the damaged plates



Practical Activity:

Measure weight of substrate (paper/card) as per instructions

Required Material:

Substrate as per job card

Round Cutter

Weighing scale

Note book

Pen/Pencil



Instructions:

1. Collect the desired substrate
2. Adjust substrate on round cutter
3. Cut the required substrate on round cutter.
4. Transfer the cut piece on substrate weighing scale
5. Perform weighing of substrate on scale
6. Maintain record of weighing



Practical Activity:

Checking of substrate size

Tools/Material

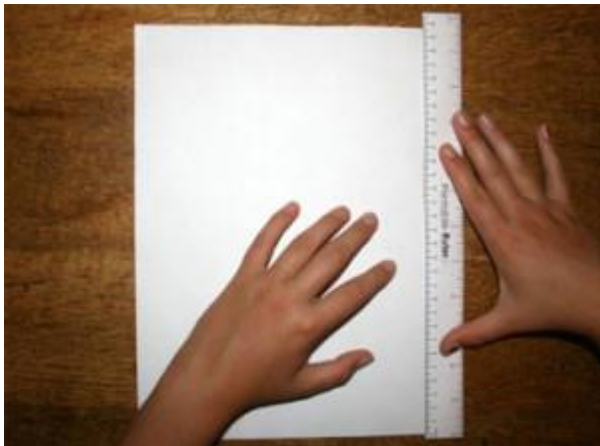
- Substrate
- Docket/job card
- Printing plate
- Measuring ruler

Outcome

After this activity student will be able to check size of the substrate.

Instructions:

- 1) Collect the desired docket/ Job card
- 2) Collect the plate of the job
- 3) Collect the substrate
- 4) Put the ruler to the substrate and verify if it is as per docket/job card, machine size and plate impression
- 5) Immediately report to the Supervisor/Senior if there is an abnormality
- 6) Continue with the printing process



Practical Activity:

Checking of artwork and plates as per docket/job card

Tools/Material

- Docket/job card
- Printing plate

Outcome

After this activity student will be able to check the art work and the printing plates

Instructions:

- 1) Collect the desired docket/ Job card
- 2) Collect the plate(s) of the job
- 3) Check the number of colors on the job card and the number of color plates are same
- 4) Report if there is any difference
- 5) Continue with the printing process

Module- C: Make ready print			
Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU-3-1 Perform machine feed	<p>Teach the following learning elements through lecture:</p> <ul style="list-style-type: none"> Identify printing side as per given specimen, Describe the steps of loading paper on the feeder section. <p>Group Activity Question Answer session</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	<p>Learner's Guide/ hand out Multimedia</p> <p>Practice Guide</p>
LU-3-2 Mount printing plates on plate cylinder	<p>Teach the learners the following learning elements;</p> <ul style="list-style-type: none"> Describe purpose of plate punching machine, Define position of plate's end lay to ensure proper bending, Explain steps of plate mounting procedure. <p>Group Activity Individual practice</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	<p>Learner's Guide/hand out Multimedia</p>
LU-3-3 Adjust machine side lay	<p>Teach the learners the following learning elements through lecture:</p> <ul style="list-style-type: none"> Explain purpose of side lay in printing machine, Define steps involve for the side lay adjustment, Express the steps involve for colour registration, Describe the position of side lay for perfect registration <p>Learners practice in small groups.</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	<p>Learner's Guide Multimedia</p> <p>Practice Guide</p>

<p>LU-3-4 Adjust machine head-lay</p>	<p>Teach the learners the following learning elements; through lecture:</p> <ul style="list-style-type: none"> • State purpose of head lay in printing machine, • State importance of head lay adjustment, • Describe the procedure of head lay adjustment. <p>Learners practice in small groups.</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	<p>Learner's Guide Multimedia</p>
<p>LU-3-5 Adjust machine feeder</p>	<p>Teach the learners the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Knowledge about effects of wrong feeder adjustment, • Explain feeder adjustment procedure, • Describe handling and care of printed and unprinted paper <p>Individual practice</p> <p>Question answer session</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	<p>Learner's Guide Multimedia</p> <p>Practice Guide</p>
<p>LU-3-6 Adjust paper delivery</p>	<p>Teach the learners the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Knowledge about the adjustment of delivery by job size • State effects of air vacuum adjustment in delivery system • Describe effects of wrong adjustment of side joggers • Enlist the advantages of delivery fan adjustment <p>Individual practice</p> <p>Question /Answer session</p>	<p>Classroom</p> <p>Press room lab/industry</p>	<p>Learner's Guide Multimedia</p>

<p>LU-3-7 Adjust cylinders impression</p>	<p>Teach the learners the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Knowledge about type of packing sheets, • Give details about blanket packing according to SOPs • Define printing on substrate with correct setting of impression cylinder. <p>Group activity: Calculating Blanket to Plate Squeeze</p> <p>Question answer session</p>	<p>Classroom</p>	<p>Learner's Guide/ Multimedia</p>
<p>LU-3-8 Perform paper run</p>	<p>Teach the learners the importance of toning after steaming.</p> <ul style="list-style-type: none"> • Define registration verification, • Describe importance of registration. <p>Group discussion</p>	<p>Classroom</p>	<p>Learner's Guide/ Multimedia</p>

OFFSET PRINTING MACHINE OPERATOR


Learner Guide

National Vocational
Certificate Level 2

Version 1 - September 2018

Module-C

Practical Activity:

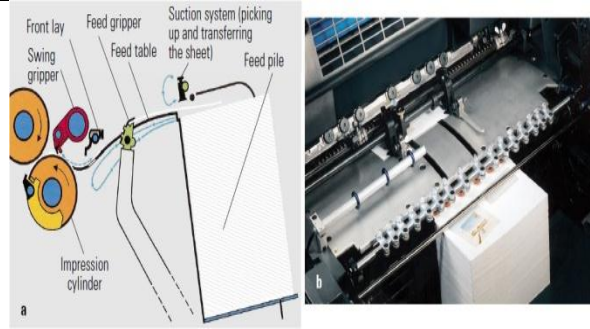
		Make ready print	
Module: C	Learning Unit: 3-1	Perform machine feed	
	Practical Description:	Feed substrate into the feeder section	
Time:	30 min		
Equipment	Working/pile table, Offset printing machine		
Tools	Spanner set, Allen key set, Ruler		
PPE	Proper dress, safety gloves, safety shoes,		
Materials	Ready substrate		
Key Point	Paper should be aligned at the center of pile table		
Learning Outcome:	Learner will be able to feed substrate into feeder section in order		
Precautions:	Make sure that the alignment of paper is not disturbed during fanning process		
Instructions		Illustrations	
1. Collect the substrate			

2. Fanning of substrate is to be done before loading can start



BFL0136

3. Lower the pile table position



4. Make sure that the pile of substrate is aligned with the center of the pile-table



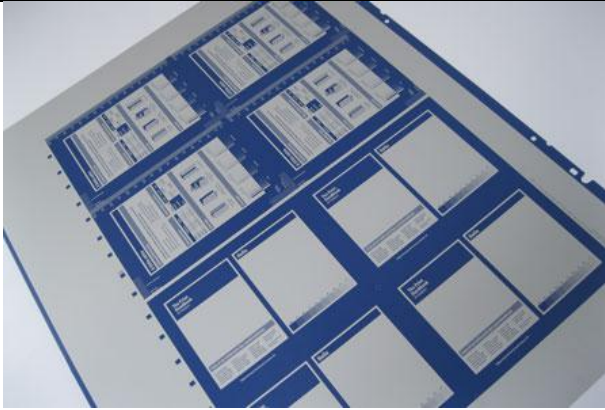
5. Position the pile guide as per the substrate size with the help of ruler



6. Load the substrate on the pile-table



Practical Activity:

		Make ready print	
Module: C	Learning Unit: 3-2	Mount printing plates on plate cylinder	
	Practical Description	Prepare and mount plate on plate cylinder	
Time:	15 min		
Equipment	Offset printing machine		
Tools	Spanner, L-key, Micrometer		
PPE	Safety gloves, safety shoes, proper dress		
Materials	Printing plates, Packing sheet		
Key Point	Punch and bending must be accurate to ensure proper registration especially when printing multi colors		
Learning Outcome:	Learner will be able to mount the plate on plate cylinder		
Precautions:	Plate must be handled carefully to avoid scratching or denting		
Instructions		Illustrations	
<p>1. Collect the printing plates</p>			

2. Examine the plate for damage or other faults



3. Measure plate caliber and prepare packing according to machine plate cylinder undercut



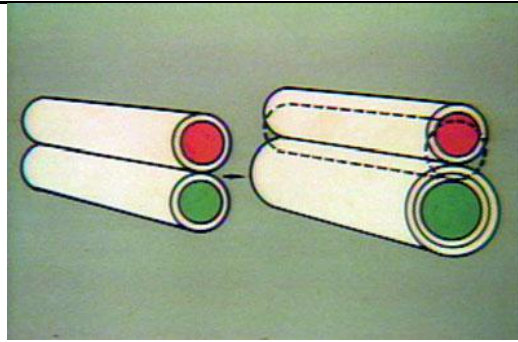
4. Place the plate on the bending slot face front from gripper side and align the plate to the center of the bending slot through plate bar



5. Center the plate center mark to coincide with the center mark present at the cylinder.



6. Insert the packing sheet of required thickness between the cylinder body and plate.



7. Press the lock lever present in the clamp so that it holds the plate, and tighten the side belts.



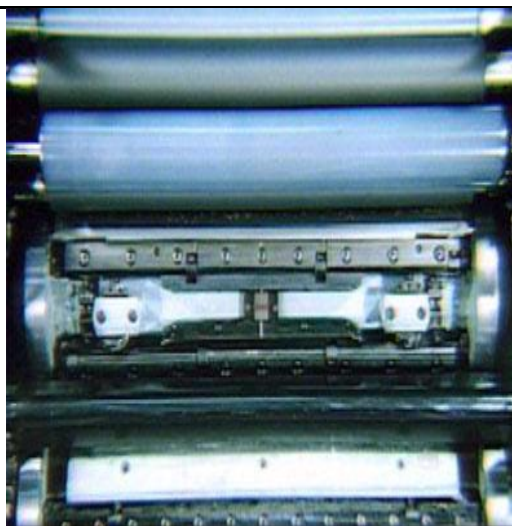
8. Remove plate from bending slot and place into the plate bar from head lay side and fix it by spanner. Then slowly move the cylinder anti-clockwise and fix end lay side into the plate bar which was bent earlier




9. Move the operating lever to the impression 'ON' position. This position makes the plate to firmly attach with the cylinder body due to the pressure given by the impression cylinder while inching.



10. Inch the machine slowly so that the trailing edge of the plate reaches the trailing edge of the clamp bar in the plate cylinder.



Practical Activity:

		Make ready print
Module: C	Learning Unit: 3-3	Adjust Machine Sidelay
	Practical Description:	Sidelay should be adjusted according to substrate size.
Time:	2 hours	
Equipment	Offset Printing Machine	
Tools	Allen Key	
PPE	Proper dress code, safety shoes	
Materials	Substrate, Offset ink, Roller wash, Plate cleaner, Cleaning rags	
Key Point	Ensure that sidelay is tightened perfectly.	
Learning Outcome:	Adjust sidelay according to the job requirement for errorless registration Adjust edge of the papers according to sidelay mark	
Precautions:	Substrate should be aligned from all sides Substrate should not be wavy.	
Instructions		Illustrations
1. Load substrate to the feeding system and adjust pile height		

2. Adjust substrate suckers according to its thickness




3. Adjust Air steam/ Air splitter



4. Adjust sidelay pin according to the required range and verify the paper for hassle-free run.



Practical Activity:

		Make ready print	
Module: C	Learning Unit: 3-4	Adjust Machine Headlay	
	Practical Description:	Adjust Headlay as per substrate size.	
Time:	15 min		
Equipment	Offset printing machine		
Tools	Allen key set, Spanner set		
PPE	Safety gloves, safety shoes, proper dress		
Materials	Paper/substrate		
Key Point	Adjustment of headlay according to substrate size		
Learning Outcome:	Learner will be able to adjust headlay as per substrate size		
Precautions:	Do not touch headlay during print run		
	Never make any adjustment during print run		
Instructions		Illustrations	
<p>1. Collect the desired substrate and load it on the feeding system</p>			

2. Adjust height of the pile




3. Adjust sucker according to the substrate


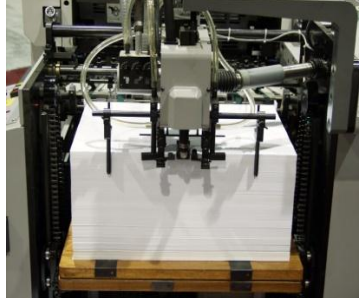




4. Adjust Air steam in Air splitter as per substrate



Practical Activity:

		Make Ready Print	
Module: C	Learning Unit: 3-5	Adjust Machine Feeder	
	Practical Description:	Set feeder according to substrate	
Time:	30 min		
Equipment	Offset Machine		
Tools	Allen Key set, spanner set		
PPE	Safety gloves, safety shoes, proper dress		
Materials	Substrate		
Key Point	Substrate should be flat. Ensure proper fanning of substrate.		
Learning Outcome:	Learner will be able to set feeder according to substrate		
Precautions:	Careful handling of substrate shall be ensured		
Instructions		Illustrations	
1. Collect the desired substrate according to Docket / Job card			

<p>2. Adjust the sheet separation unit as per substrate</p>	
<p>3. Pile is raised to the feeding position. Adjust the pile height</p>	
<p>4. Set the vacuum air control according to the substrate.</p>	
<p>5. Set position of the air blast nozzle and adjust air in suckers and blowers</p>	

6. Adjust double sheet detector according to substrate




7. Verify the function of double sheet detector.

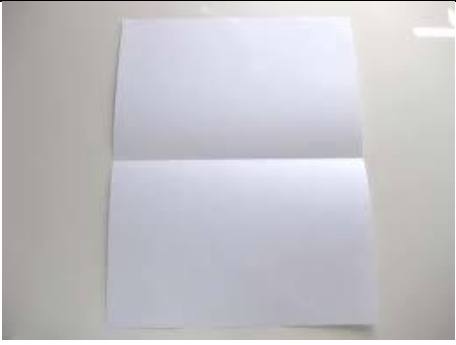
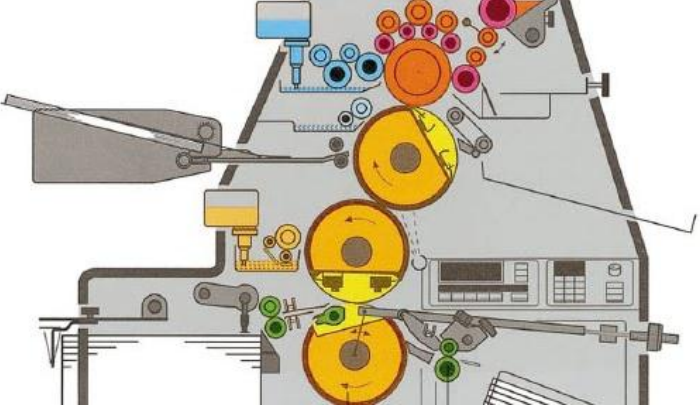




8. Verify alignment of substrate.



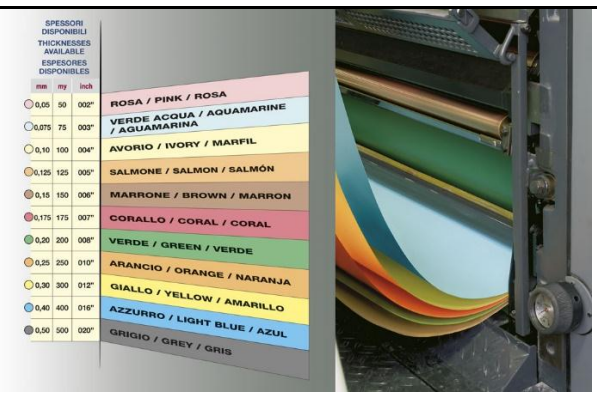

Practical Activity:

		Make ready print
Module: C	Learning Unit: 3-6	Adjust paper delivery.
	Practical Description:	Delivery should be adjusted according to substrate size.
Time:	45 min	
Equipment	Offset printing machine	
Tools	Spanner, Allen key set	
PPE	Proper dress code, safety shoes, safety gloves	
Materials	Substrate	
Key Point	Ensure the delivery is accurately adjusted to substrate size.	
Learning Outcome:	Learner will be able to adjust substrate delivery.	
Precautions:	After adjustment none of the machine part be left loose/ unlocked.	
Instructions		Illustrations
1. Adjust the substrate on the delivery		

<p>2. Verify the center point of the substrate.</p>	
<p>3. Adjust backlay according to substrate size.</p>	
<p>4. Adjust side joggles according to the substrate size.</p>	
<p>5. Perform paper run for gripper adjustment. Adjust fan as per substrate size.</p>	

Practical Activity:

		Module Description	
Module: C	Learning Unit: 3-7	Adjust cylinder impression	
	Practical Description:	Perform plate cylinder packing according to OEM	
Time:	15 min		
Equipment	Offset printing machine		
Tools	Tommy bar, Spanner set, Micro meter		
PPE	Proper dress code, Safety gloves, safety shoes		
Materials	Calibrated sheets/offset paper sheet		
Key Point	Packing sheet should be flat.		
Learning Outcome:	Learner will be able to perform plate cylinder packing according to OEM		
Precautions:	Special care must be taken when tightening the plate firmly around the plate cylinder.		
	Excessive tension on the plate may crack the plate at the clamps		


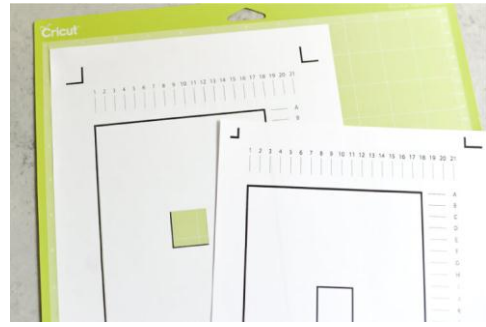
Instructions	Illustrations																																																
<p>1. Arrange fresh packing sheets</p>	 <p>The illustration shows a color calibration chart with a table of thicknesses and a photograph of a printing machine's plate cylinder assembly. The table lists thicknesses in mm, my, and inch for various colors. The photograph shows a stack of colored sheets being fed into a printing machine.</p> <table border="1"> <thead> <tr> <th>mm</th> <th>my</th> <th>inch</th> <th>Color</th> </tr> </thead> <tbody> <tr> <td>0.05</td> <td>50</td> <td>002"</td> <td>ROSA / PINK / ROSA</td> </tr> <tr> <td>0.075</td> <td>75</td> <td>003"</td> <td>VERDE ACQUA / AQUAMARINE / AQUAMARINA</td> </tr> <tr> <td>0.10</td> <td>100</td> <td>004"</td> <td>AVORIO / IVORY / MARFIL</td> </tr> <tr> <td>0.125</td> <td>125</td> <td>005"</td> <td>SALMONE / SALMON / SALMON</td> </tr> <tr> <td>0.15</td> <td>150</td> <td>006"</td> <td>MARRONE / BROWN / MARRON</td> </tr> <tr> <td>0.175</td> <td>175</td> <td>007"</td> <td>CORALLO / CORAL / CORAL</td> </tr> <tr> <td>0.20</td> <td>200</td> <td>008"</td> <td>VERDE / GREEN / VERDE</td> </tr> <tr> <td>0.25</td> <td>250</td> <td>010"</td> <td>ARANCIO / ORANGE / NARANJA</td> </tr> <tr> <td>0.30</td> <td>300</td> <td>012"</td> <td>GIALLO / YELLOW / AMARILLO</td> </tr> <tr> <td>0.40</td> <td>400</td> <td>016"</td> <td>AZZURRO / LIGHT BLUE / AZUL</td> </tr> <tr> <td>0.50</td> <td>500</td> <td>020"</td> <td>GRIGIO / GREY / GRIS</td> </tr> </tbody> </table>	mm	my	inch	Color	0.05	50	002"	ROSA / PINK / ROSA	0.075	75	003"	VERDE ACQUA / AQUAMARINE / AQUAMARINA	0.10	100	004"	AVORIO / IVORY / MARFIL	0.125	125	005"	SALMONE / SALMON / SALMON	0.15	150	006"	MARRONE / BROWN / MARRON	0.175	175	007"	CORALLO / CORAL / CORAL	0.20	200	008"	VERDE / GREEN / VERDE	0.25	250	010"	ARANCIO / ORANGE / NARANJA	0.30	300	012"	GIALLO / YELLOW / AMARILLO	0.40	400	016"	AZZURRO / LIGHT BLUE / AZUL	0.50	500	020"	GRIGIO / GREY / GRIS
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<p>2. Perform measurement of packing sheet with micro meter as per OEM</p>	 <p>The illustration shows a Mahr Micromar 40A micrometer, a precision measuring instrument used for measuring the thickness of the packing sheet.</p>																																																

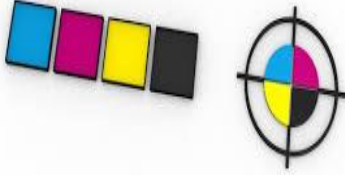

3. Insert packing sheet in plate cylinder

4. Mount plate on plate cylinder. Ensure smooth surface of plate after inking.



Practical Activity:

		Make ready print	
Module C:	Learning Unit: 3-8	Perform Paper Run.	
	Practical Description:	Registration is the key to quality print.	
Time:	1 hour		
Equipment	Offset Printing machine		
Tools	Magnifying/ Eye glass		
PPE	Proper dress, safety shoes, safety gloves		
Materials	Substrate		
Key Point	Observe all the marks on the edges of the substrate to assure perfect registration		
Learning Outcome:	Learner will be able to achieve perfect registration.		
Precautions:	After adjustment none of the machine part be left loose/ unlocked.		
Instructions		Illustrations	
1. Fold the substrate from the center to verify center mark			
2. Observe all the marks on the edges of the substrate to assure perfect registration 3. Verify if the front marks/margin is equal or it will cause issues in post-production activities.			
			

<p>4. Reprint the printed sheets to assure image placement is correct.</p>	 <p>The image shows a set of four color calibration bars (cyan, magenta, yellow, and black) and a registration mark consisting of a circle with a crosshair.</p>
<p>5. Reprint the printed sheets to assure if there is no issue of double printing or doubling.</p>	 <p>The image shows a registration mark consisting of a circle divided into four quadrants by a vertical green line and a horizontal blue line. The quadrants are labeled with the letters C (cyan), M (magenta), Y (yellow), and K (black).</p>

Module-D: Perform Print run			
Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU-4-1 Maintain balance between ink and water.	<p>Teach the learners the following learning element through lecture:</p> <ul style="list-style-type: none"> • Discuss the checking parameters, • Define pH, • Define conductivity, • Define fountain solution and its usage, • Define IPA and its usage, • Explain dampening setting, • Define ink density and its importance. <p>Group discussion Individual question answer session</p>	Classroom	<p>Learner's Guide/ Multimedia</p> <p>Practice Guide</p>
LU-4-2 Manage dot gain	<p>Teach the learners the following learning elements</p> <ul style="list-style-type: none"> • Define dot gain, • Define effects of dot gain on printing, • Explain factors responsible for dot gain. <p>Question answer session</p>	Class room	Learner's guide/ Multimedia
LU-4-3 Maintain registration	<p>Teach the learners the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Describe registration, • Explain purpose of head lay and side lay marks, • State necessity of magnifying glass in registration process. <p>Practice to maintain registration</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	Learner's Guide/ Multimedia

<p>LU-4-4 Control Delta E values / variation</p>	<p>Teach the learners the following learning elements through lecture:</p> <ul style="list-style-type: none">• Explain ΔE,• Describe $L^*a^*b^*$ values,• State importance of maintaining $L^*a^*b^*$ values during production <p>Arrange Question and answers session</p>	<p>Classroom</p>	<p>Learner Guide Multimedia</p>
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OFFSET PRINTING MACHINE OPERATOR


Learner Guide

National Vocational
Certificate Level 2

Version 1 - September 2018

Module-D

Practical Activity:

		Perform print run	
Module: D	Learning Unit: 4-1	Maintain balance between ink and water	
	Practical Description:	Maintain pH value of water as per SOPs	
Time:	30 min		
Equipment	Offset printing machine		
Tools	pH meter,		
PPE	Proper dress code, Safety gloves, Safety gloves		
Materials	Water		
Key Point	Check pH value of water		
Learning Outcome:	Learner will be able to maintain pH value of required		
Precautions:	Avoid measuring pH value of water during machine run.		
	Carefully handle the meter in beaker		
Instructions		Illustrations	
1. Collect the required material/equipment			



2. Collect sample of water from machine tank in a beaker



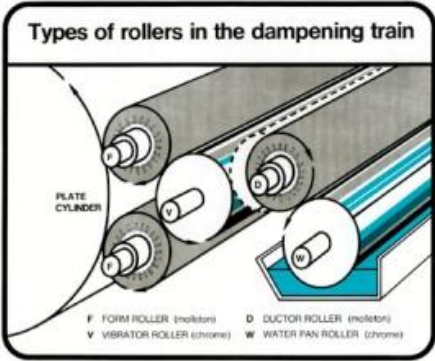
3. Dip the pH meter in the beaker up to the desired mark



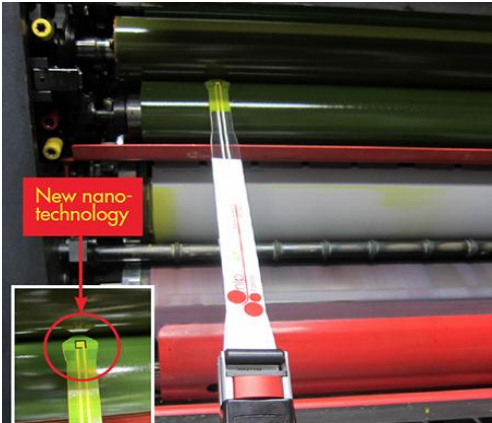
Practical Activity:

		Perform print run	
Module: D	Learning Unit: 4-1	Maintain balance between ink and water	
	Practical Description:	Perform Dampening roller setting	
Time:	30 min		
Equipment	Offset printing machine		
Tools	Spanner, Allen key		
PPE	Proper dress code, safety shoes, safety gloves		
Materials			
Key Point	Setting of fountain (dampening) rollers must be adjusted smoothly		
Learning Outcome:	Learner will be able to perform dampening rollers setting		
Precautions:	Avoid over tightening of dampening rollers.		
Instructions		Illustrations	
1. Mount plate on plate cylinder with required packing standard.			
2. Install first dampening roller. Arrange 2 film strips 2" inch wide and 24" inch long. 3. Insert both the strips between plate and font rollers 2" inch away from corners.			

4. Activate dampening system by lever



5. Check the pressure by pulling the strip.
6. Ensure smooth function of the strip.
7. Follow the same process between font rollers and vibrator roller.



8. Adopt the same procedure with the second font roller.





Practical Activity:

		Perform print run	
Module: D	Learning Unit: 4-3	Maintain registration	
	Practical Description:	Maintain registration of printed sheets within recommended intervals.	
Time:	1 hours		
Equipment	Offset printing machine		
Tools	Magnifying/Eye glass, spanner		
PPE	Proper dress code, safety gloves, safety shoes		
Materials	Substrate, Offset ink.		
Key Point	Quality in printing can only be achieved with perfect registration.		
Learning Outcome:	Maintain Registration and Verify sidelay & headlay marks		
Precautions:	Without verifying the registration the quality of the job will be effected		
Instructions		Illustrations	

Module-E: Perform Post production activities			
Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU-5-1 Perform ink rollers cleaning	<p>Teach the learners the following learning elements through lecture:</p> <ul style="list-style-type: none"> • State about the inking system and the importance of roller cleaning, • Explain method of optimising life span of machine rollers • Define methods of risk free cleaning. <p>Arrange group practice of roller cleaning</p> <p>Question answer session</p>	<p>Classroom</p> <p>-do-</p> <p>Press room lab/ industry</p>	<p>Learner's Guide/ Multimedia</p> <p>Practice Guide</p> <p>-do-</p>
LU-5-2 Wash printing plates	<p>Teach the learners the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Explain importance of plate cleaning process, • Explain application of CTP plate chemicals • Describe method of washing ink from conventional plates. <p>Arrange practice of washing printing plates</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	<p>Learner's Guide/ Multimedia</p> <p>Practice Guide</p>
LU-5-3 Wash printing Blanket	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Explain purpose of blanket in printing machine, • Discuss the importance and procedure of blanket washing <p>Arrange practice of washing printing plates</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	<p>Learner's Guide/Hand Outs Multimedia</p>

<p>LU-5-4 Clean impression cylinder</p>	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Explain the importance of cylinder cleaning, • Define procedure of impression cylinder cleaning. <p>Arrange practice of cleaning impression cylinder</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	<p>Learner's Guide/Hand outs Multimedia</p>
<p>LU-5-5 Wash dampening rollers</p>	<p>Teach the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Explain purpose of dampening rollers in printing machine, • Define purpose of dampening tube and procedure of dampening tube change. • State procedure of dampening roller wash, <p>Arrange practice of washing printing plates</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	<p>Learner's Guide/Hand outs Multimedia</p>
<p>LU-5-6 Perform ink knives cleaning</p>	<p>Teach the following learning elements through lecture:</p> <ul style="list-style-type: none"> • State the importance of ink knife cleaning, • Describe the life of knives rubber. <p>Arrange practice of cleaning ink knives</p>	<p>Classroom</p> <p>Press room lab/ industry</p>	<p>Learner's Guide/Handouts Multimedia</p>

Practical Activity:

		Perform post-production activities	
Module E:	Learning Unit: 5-1	Perform ink roller cleaning	
	Practical Description:	Clean ink rollers in a conventional dampening offset machine	
Time:	30 min		
Equipment	Offset printing machine		
Tools	Cleaning knife, scrapper		
PPE	Proper dress code, safety shoes, Rubber gloves		
Materials	Roller wash/Kerosene oil		
Key Point	Using proper cleaning agent is eminent; kerosene oil can reduce the life of rollers as well as printing machine.		
Learning Outcome:	The learner will be able to clean ink rollers in offset printing machine		
Precautions:	Use rubber gloves to avoid chemical contact		
Instructions		Illustrations	
<p>1. Take the ink remaining in the duct carefully from the ink duct.</p>			
<p>1. Clean the metal blade and duct rollers by using cleaning agents and wash cloth. During this time the ducter roller must be fully out of contact from the duct roller. It should be made contact with the oscillator.</p>			

2. Insert the ink wash up device in the provision present near to the distributor roller.



3. Tight the wash up device smoothly



4. Start the machine for running, and pour the cleaning agent over the roller surface.

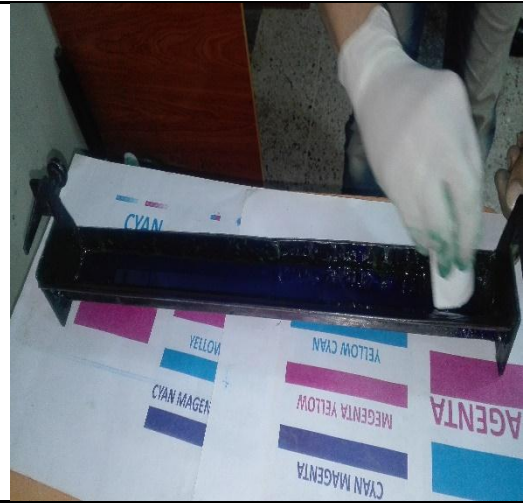


Note:

Due to the contact of all inking rollers with one another, the cleaning agent is transferred to all roller surfaces. Now the ink gets cleaned and solvent particles are finally collected in the wash up device.



5. Clean the wash up device to make it free from the waste collected material.



OFFSET PRINTING MACHINE OPERATOR


Learner Guide

National Vocational
Certificate Level 2

Version 1 - September 2018

Module-E

Practical Activity:

Module: E	Perform post production activities	
	Learning Unit: 5-2	Wash Printing Plates
	Practical Description:	Remove printing plates from machine as per SOP.
Time:	30 Min	
Equipment	Offset Printing Machine	
Tools	Spanner Set, Tommy Set	
PPE	Proper dress code, safety shoes, safety gloves	
Materials		
Key Point	Follow steps to take out plate from plate cylinder	
Learning Outcome:	Perform the plate cleaning process as per SOP and use the required plate cleaning chemical	
Precautions:		
Instructions		Illustrations
<ol style="list-style-type: none"> 1. Follow the method of removing plate 		



2. Printing machine must be in the stop position.




3. Spanner and Tommy must be used to take the plate out.



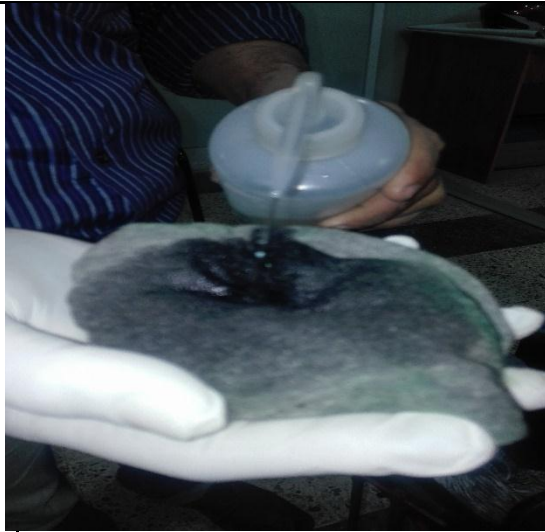
Practical Activity:

		Perform post production activities	
Module: E	Learning Unit: 5-2	Wash Printing Plates	
	Practical Description:	This practical helps to know the benefits of the printing plate wash and to conserve the plates for re-use.	
Time:	30 Min		
Equipment	Offset Printing Machine		
Tools	Spanner Set, Tommy Set		
PPE	Proper dress code, safety shoes, safety gloves		
Materials	Cleaning Cloth, plate cleaner chemical.		
Key Point	Clean Plate With Clean Cloth		
	Follow steps to take out plate from plate cylinder		
	Cleans plate on the clean surface		
Learning Outcome:	Perform the plate cleaning process as per SOP and use the required plate cleaning chemical		
Precautions:			
Instructions		Illustrations	
1. Take the plate out of the plate cylinder using the spanner and Tommy set.			
<ol style="list-style-type: none"> 1. Straight the plate by hands with the help of a clean cloth, 2. Clean the plate by using the plate cleaner chemical. 3. Coat the plate with the preserving chemical. 4. Store the plate for further use 			

Practical Activity:

		Post Production activities	
Module E:	Learning Unit: 5-3	Wash printing blanket	
	Practical Description:	Cleaning Blanket	
Time:	30 min		
Equipment	Offset press		
Tools	Tommy set		
PPE	Proper dress code, Rubber gloves, Face mask		
Materials	Cleaning agent, Cleaning cloth		
Key Point	Handle the blanket carefully		
Learning Outcome:	Learner will be able to perform blanket wash as per SOP		
Precautions:	Do not touch the chemicals without proper protective equipment		
Instructions		Illustrations	
<ol style="list-style-type: none"> 1. Stop the machine and make the machine run in inching/crawling mode 			

2. Take a cloth and soak it with cleaning agent




3. Clean the blanket with this cloth in right to left motion



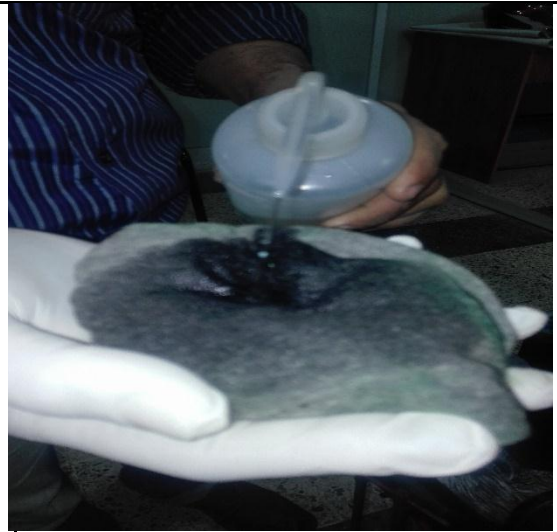
4. Take a dry clean cloth and wipe the diluted ink
5. Make sure the blanket is dry and completely clean



Practical Activity:

		Post Production activities	
Module E:	Learning Unit: 5-4	Clean impression cylinder	
	Practical Description:	Perform impression cylinder wash up as per SOP	
Time:	30 min		
Equipment	Offset printing machine		
Tools			
PPE	Proper dress code, Rubber gloves, Face mask		
Materials	Cleaning agent, Cleaning cloth		
Key Point	Clean the cylinder right to left		
Learning Outcome:	Learner will be able to perform impression cylinder wash as per SOP		
Precautions:	Do not touch the chemicals without proper protective equipment		
Instructions		Illustrations	
1. Stop the machine and make the machine run in inching mode			

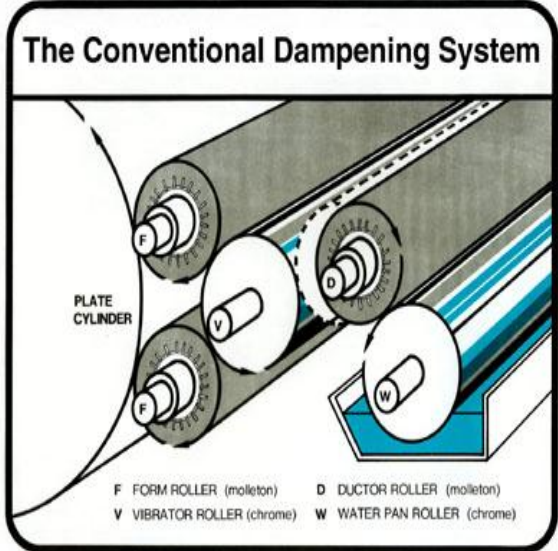
2. Take a cloth and sock it with cleaning agent



3. Clean the cylinder with this cloth in right to left motion
4. Take a dry clean cloth and wipe the diluted ink
5. Make sure the cylinder is dry and completely clean



Practical Activity:

Module: E	Perform post production activities	
	Learning Unit: 5-5	Wash dampening rollers
	Practical Description:	Identify the dampening rollers in a printing machine
Time:	10 min	
Equipment	Offset printing machine	
Tools	Nylon brush, scrapper	
PPE	Proper dress code, Rubber gloves, safety shoes	
Materials		
Key Point	Make sure you name them correctly.	
Learning Outcome:	The learner will be able to name all the dampening rollers	
Precautions:	Make sure that the machine is shut down	
Instructions		Illustrations
1. Shut down the printing machine		
2. Visually observe the dampening system		 <p style="text-align: center;">The Conventional Dampening System</p> <p>PLATE CYLINDER</p> <p>F FORM ROLLER (moleton) D DUCTOR ROLLER (moleton) V VIBRATOR ROLLER (chrome) W WATER PAN ROLLER (chrome)</p>

3. Note down the names of rollers in order of contact	
4. Show your trainer the names you have written	



Module-F: Complete Documentation Requirements			
Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU-6-1 Document work time	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • State necessity of work time record <p>Ask students to prepare time sheet Individual activity</p>	Classroom	Learner's Guide/Handouts Multimedia
LU-6-2 Document information	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Explain consumable and non-consumable material, • Explain customer's feedback and its importance. <p>Ask students to give feedback to each other and discuss it in Group activity</p>	Classroom	Learner's Guide/Handouts Multimedia
LU-6-3 Maintain machine log	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Explain maintaining of machine log as per SOPs • Explain the importance of maintaining production log as per SOPs <p>Ask students to fill up log sheets and discuss in group activity</p>	Classroom	Learner's Guide/Handouts Multimedia

Module-G: Adhere to Safety Standards and Regulations

Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
<p>LU-7-1 Identify hazards in printing press environment</p>	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Describe health and safety precautions of the printing industry • Explain techniques and methods to control risks of identified hazards in the workplace • Describe procedure of dealing with hazards to reduce/avoid chances of accident or injury • Define safety reporting procedures. <p>Ask students to make a list of techniques and method to control hazards Individual/group activity</p>	<p>Classroom</p>	<p>Learner's Guide/Handouts Multimedia</p>
<p>LU-7-2 Comply with Occupational Health and Safety (OHS) precautions</p>	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • state organizational health and safety procedures, • Describe health and safety risks that can arise because of accidents • Enlist types of hazards that are most likely to cause harm to health and affect safety <p>Group discussion about OHS</p>	<p>Classroom</p>	<p>Learner's Guide/Handout Multimedia</p>

<p>LU-7-3 Use Personal Protective Equipment(PPE)</p>	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • State importance of using Personal Protective Equipment (PPE) • Discuss types of PPEs required in printing press. <p>Engage learners to make a list of types of PPEs and understand their importance</p>	<p>Classroom</p>	<p>Learner's Guide/ Handouts Multimedia</p>
<p>LU-7-4 Practice safe work habits to ensure safety in the printing environment</p>	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Describe importance of safety at work and its implications, • Discuss work safety procedures and guidelines • list specific company procedures regarding workplace safety • Explain procedure for cleaning and safe storing of tools and equipment. <p>Group discussion</p>	<p>Classroom</p>	<p>Learner's Guide/Handout Multimedia</p>
<p>LU-7-5 Demonstrate firefighting skills</p>	<p>Teach the learner the following learning elements through lecture:</p> <ul style="list-style-type: none"> • Describe types of fire and firefighting equipment • Explain firefighting method <p>Arrange a fire drill</p> <p>Question answer session</p>	<p>Classroom</p>	<p>Learner's Guide/ Handouts Multimedia</p>

Practical Activity:

Module: G	Adhere to safety standard and regulations	
	Learning Unit: 7-1	Identify hazards in printing press environment
	Practical Description:	Interpret work processes and procedures to identify risk of hazard at printing press
Time:	2 hours	
Equipment	N/A	
Tools	N/A	
PPE	Proper dress code, safety shoes, safety gloves, mask	
Materials	Copy of SOP's, Copy of safety guide, Machine manual	
Key Point	Make sure personal safety	
Learning Outcome:	Interpret work processes and procedures to identify risk of hazards at printing press	
Precautions:	Ensure safety	
Instructions		Illustrations
1. Remove hazardous materials/articles from near to the machine		
2. Check all electric wiring and connection		



3. Remove all used chemicals away from machine and Substrate (paper/board)







4. Wear working cloth and safety shoes










Practical Activity:

Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-1	Identify hazards in printing press
	Practical Description:	Recognize printing processes, tools, equipment and consumable material that have the potential to cause harm
Time:	2 hours	
Equipment	Fire extinguisher	
Tools	N/A	
PPE	Proper dress code, safety shoes, safety gloves, mask	
Materials	Copy of SOP's, Copy of safety guide, List of tools and equipment, Machine manual, Chemical, Solvents, First aid box	
Key Point	Recognize hazards	
Learning Outcome:	The learner will be able to Recognize printing processes, tools, equipment and consumable material that have the potential to cause harm	
Precautions:	Ensure safety	
Instructions		Illustrations
1. Arrange the required tool set equipment in order		
2. Store chemicals and solvents at appropriate place		



<p>3. Segregate the hazardous chemicals, equipment, tools and solvents which have to cause harm</p>	
<p>4. Clean the tools after completion of task</p>	
<p>5. Store the tools, equipment, chemicals and solvents to their respective places</p>	
<p>6. Wash your hands with soap.</p>	







Practical Activity:

Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-1	Identify hazards in printing press
	Practical Description:	Identify potential hazards & take appropriate actions to minimize the risk
Time:	4 hours	
Equipment	Offset printing machine	
Tools	N/A	
PPE	Proper dress code, safety shoes, safety gloves	
Materials	Copy of SOP's, Copy of safety guide, List of tools and equipment, Machine manual, Health and safety manual, health and safety posters	
Key Point	Recognize hazards	
Learning Outcome:	Identify potential hazards to minimize accident risk & take appropriate action to minimize the risk	
Precautions:	Make sure personal safety	
Instructions	Illustrations	
1. Wear dress according to press room requirement		
2. Wear gloves		

<p>3. Keep hazardous chemical and solvents away from the machine</p>	
<p>4. Check electric wiring and electric connection of the machine</p>	
<p>5. After using the chemicals and solvents, place them to their respective places</p>	
<p>6. Check oil level of the machine</p>	
<p>7. Remove all used articles and dispose off them accordingly</p>	

Practical Activity:



Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-2	Comply with occupational health and safety (OHS) precautions
	Practical Description:	Comply with health and safety precautions and relevant guidelines and identify OHS hazards in printing press to prevent from potential accidents
Time:	1 hour	
Equipment	N/A	
Tools	N/A	
PPE	Mask, Gloves, Tight cloths as per SOP's of press room, safety shoes	
Materials	Copy of guideline of safety and health precautions, copy of Occupational health and safety (OHS) hazards SOP's,	
Key Point	Make sure personal safety	
Learning Outcome:	Comply with health and safety precautions and relevant guidelines and identify OHS hazards in printing press to prevent from potential or accidents	
Precautions:	Safety first	
Instructions		Illustrations
1. adopt proper dress code		
2. Ensure cleaning of surrounding area		

<p>3. Check electric phases and connections</p>	
<p>4. Keep hazardous articles at their proper place</p>	
<p>5. Check the oil level of machine</p>	
<p>6. Arrange tools in order</p>	
<p>7. Ensure safe handling of tools</p>	
<p>8. Perform Inching of printing machine</p>	

9. Remove and dispose of used and waste articles as per SOPs






Practical Activity:

Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-2	Comply with occupational health and safety (OHS) precautions
	Practical Description:	Dealing of problems which are within assistant machine operator's control and which are out of assistant machine operator's control and its reporting
Time:	2 hours	
Equipment	Offset printing machine	
Tools	N/A	
PPE	Proper dress code, safety gloves, mask, safety shoes	
Materials	Machine oil & IPA, Cleaning agent (solvent), Cleaning cloth	
Key Point	Never use any machine/equipment you have not been trained to use.	
Learning Outcome:	Dealing of problems safely	
Precautions:	Ensure safety	
Instructions		Illustrations
1. Check electric connection, phase of machine		
2. Check oil level of machine		
3. Learner will be able to perform the following tasks: a. Check water level in machine b. Fix the plate c. Check the blanket		

<ul style="list-style-type: none">d. Maintain the humidity according to SOPse. Use of different consumables	
<ul style="list-style-type: none">4. The following issues shall not be dealt by the assistant machine operator and must be reported to supervisor<ul style="list-style-type: none">a. Machine break downb. Sparking / fire in electrical circuit boardc. Ventilation problemd. Humidity level is less than 40 degree	



Practical Activity:




Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-2	Comply with occupational health and safety (OHS) precautions
	Practical Description:	Adoption of dress code as per printing press SOPs
Time:	2 hours	
Equipment	N/A	
Tools	N/A	
PPE	Tight cloths as per SOP's of press room, Mask, Gloves, safety shoes	
Materials		
Key Point	Make sure personal safety	
Learning Outcome:	The learner will be able to adopt dress code as per printing press SOPs	
Precautions:		
Instructions		Illustrations
1. Wear proper well-fitted pants and T shirt		
2. Wear safety shoes		
3. Wear gloves		

4. Wear mask





Practical Activity:

Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-3	Use personal protective equipment (PPE)
	Practical Description:	Selection of personal protective equipment PPE in terms of type and quantity according to work order and verification of PPE to ensure optimum protection in compliance with press room procedures
Time:	30 min	
Equipment	N/A	
Tools	N/A	
PPE	Tight cloths as per SOP's of press room, Mask, Gloves, safety shoes, First aid box	
Materials	First aid box	
Key Point	Safety First	
Learning Outcome:	Selection and verification of personal protective equipment (PPE) to ensure optimum protection in compliance with press room procedures	
Precautions:		
Instructions		Illustrations
1. Wear proper dress		
2. Wear safety shoes		

<p>3. Wear gloves</p>	
<p>4. Check first aid box and its articles</p>	
<p>5. Read carefully the SOPs of PPE</p>	
<p>6. Check whether all the PPE procedure for press room has be complied</p>	

Practical Activity:

	Adhere to safety standards and regulations	
Module: G	Learning Unit: 7-3	Use personal protective equipment (PPE)
	Practical Description:	Ensure personal protective equipment hygiene in compliance with press room procedures
Time:	2 hours	
Equipment	N/A	
Tools	N/A	
PPE	Proper dress, safety shoes, safety gloves	
Materials	Dust bin, first aid box	
Key Point	Safety first.	
Learning Outcome:	Ensure personal protective equipment hygiene in compliance with press room procedures	
Precautions:		
Instructions		Illustrations
1. Adopt proper PPEs		
2. Dispose off waste material immediately		

3. Do not left chemicals and solvents open, after performing job






4. In the end, wash your hands properly






5. The press room must have good ventilation system





Practical Activity:

Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-4	Practice safe work habits to ensure safety in the printing environment
	Practical Description:	Application of dress code in accordance with press room procedures and follow rules to ensure personal safety as well as safety of others as per press room procedure
Time:	2 hours	
Equipment	N/A	
Tools	N/A	
PPE	Proper dress, safety gloves, safety shoes, mask	
Materials	First aid box	
Key Point	Personal safety as well as safety of others as per press room procedure	
Learning Outcome:	Application of dress code in accordance with press room procedures	
Precautions:	Safety First	
Instructions		Illustrations
1. Wear tight cloths		
2. Wear safety shoes		
3. Wear gloves		

<p>4. Always place tools to their respective positions</p>	
<p>5. Handle tools and equipment carefully</p>	
<p>6. Never leave chemicals and solvents open</p>	
<p>7. Always follow SOPs</p>	

Practical Activity:

Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-4	Practice safe work habits to ensure safety in the printing environment
	Practical Description:	keep work area clear from obstructions as per safety policies
Time:	2 hours	
Equipment	N/A	
Tools	N/A	
PPE	Proper dress code, safety shoes, safety gloves	
Materials		
Key Point	Good housekeeping eliminates the risk of accidents	
Learning Outcome:	Demonstrate housekeeping in the workplace by cleaning up spills or leaks and keep work area clear from obstructions as per safety policies	
Precautions:	Safety first	
Instructions		Illustrations
1. Clean surrounding area of machine		
2. Remove and clean any leakage of oil from surrounding area of machine		

3. Clean the machine properly




4. Remove unwanted articles from the press room





5. Place all tools to their respective positions





Practical Activity:


Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-4	Practice safe work habits to ensure safety in the printing environment
	Practical Description:	Ensure tools or equipment in place prescribed as per company procedures
Time:	1 hour	
Equipment	N/A	
Tools	N/A	
PPE	Proper dress code, safety shoes, safety gloves	
Materials		
Key Point	Safe handling & storing of tools/equipment	
Learning Outcome:	Ensure tools or equipment in place prescribed as per company procedures	
Precautions:		
Instructions		Illustrations
1. Read company procedure and policy to place the tools accordingly.		
2. Place the tools to their respective places in accordance with company procedure after use.		

Practical Activity:

Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-5	Demonstrate Firefighting Skills
	Practical Description:	Stop fire by applying fire-fighting policies
Time:	2 hours	
Equipment	Fire extinguisher	
Tools	N/A	
PPE	Safety clothing, safety shoes, safety gloves, First aid box	
Materials	Dust bins, Fire extinguisher	
Key Point	Apply firefighting policies	
Learning Outcome:	The learner will be able to Make decision in the process of fighting a fire as per SOPs and stop fire by applying fire-fighting policies with safety precautions	
Precautions:	Safety first	
Instructions		Illustrations
1. In case of fire immediately inform supervisor		
2. Act on instructions of supervisor, use fire extinguisher accordingly		

<p>3. Wear necessary dress and article before extinguishing the fire</p>	 An illustration showing a person's hands holding a yellow fire extinguisher. The extinguisher has a green label that reads "CLASS-A DRY CHEMICAL EXTINGUISHER". Below the label, there are instructions in multiple languages: "INSTRUCTION", "PULL/ALE", "SOMBITU OPIMAR", and "SWEEP/ARRASTRO EN UN LADO A OTRO". The extinguisher is being used to spray a fire in a pan.
<p>4. After extinguishing the fire check the press room properly</p>	 A photograph of a busy press room. The room is filled with various items, including boxes, bags, and equipment. Several people are visible working at tables. The room appears to be a storage or processing area for printed materials.
<p>5. Shift all the undamaged articles to safe place</p>	
<p>6. Apply SOPs procedure when fire has been put out</p>	

Practical Activity:

Module: G	Adhere to safety standards and regulations	
	Learning Unit: 7-5	Demonstrate Firefighting Skills
	Practical Description:	Apply the procedures after a fire has been put out as per SOPs
Time:	2 hours	
Equipment	Fire extinguisher	
Tools		
PPE	First aid box, safety dress code, safety gloves, safety shoes	
Materials	Dust bins	
Key Point	Act on instructions of supervisor/senior	
Learning Outcome:	The learner will be able to apply the procedures after a fire has been put out as per SOPs	
Precautions:	Ensure personal safety and safety of other coworkers	
Instructions		Illustrations
<p>1. Always use safety dress code</p>		

<p>2. Follow a program that includes preparation, prevention, and recognition of fire hazards.</p>	
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<p>3. Practice proper handling of combustible and flammable material.</p>	
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<p>4. Maintain safe housekeeping practices that reduce the risk of fire danger.</p>	
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<p>5. Always keep adequate fire control equipment in your work area to extinguish fire before it goes out of control</p>	
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IMPLEMENTATION OF CBT PROGRAM

Entry Requirement:

Entry for assessment for this qualification is open for CNIC holders. However, entry in institute for formal Competency Based Training (CBT) in this qualification, the candidate must have Secondary School Certificate /Matric or equivalent however a person who has at least two years working experience at printing press after eight years of schooling is eligible to be a candidate for training.

Minimum qualification of trainer:

- a. Matric with 5 years working experience in printing industry
- b. Experience of teaching (at least one year)
- c. Good communication and computer skills
- d. Trained for CBT implementation

Recommended trainer, trainee ratio

Institutional Training: 16~20 on Job Training (OJT): 1:4~8

Medium of instructions:

Local / Urdu / English (depending on the learner's understanding)

Proposed duration of Training;

Institutional Training: 03 Month

OJT: 03 Month

Scheme of work:

This curriculum comprises of 7 modules.

The recommended delivery time is: 820 hours/82 credit hours.

Delivery of the course can therefore be: 05 hours/working day, 5 days a week.

Training providers are at liberty to develop other models of delivery, including part-time and evening delivery.


GENERAL INSTRUCTIONS FOR TRAINER/INSTRUCTOR


Following are the general instructions for Trainers/Instructors:

1. Instructor should perform the role of a facilitator and it is his/her responsibility to focus on the training of learners. He/she must be responsible to make the environment of class/workshop friendly, so that the learner can easily understand and ask the questions from the Trainer.
2. Motivate the learners to discuss the new ideas as under;
 - By asking questions
 - By using flash card/charts
 - By making the topic interesting through real stories/example
3. The theory/practical ratio must be considered as 20%/80%.
4. First impart knowledge and then perform practical demonstration.
5. Time management should be the first priority of Trainers as well as for learners
6. A detailed explanation should be conveyed to the learners by the Trainer about each learning unit.
7. After performing practical demonstration, invite the learners to do the same demonstration according to the given sequence and arrange essential requirements, so that each learner can easily perform the task individually or in group.
8. To enhancing the knowledge of learners, allow them for group discussion.
9. Learner will be divided into small groups by the Trainer.
10. Each group should present their practical job to the Instructor at the end of the session.
11. Specific time should be given to each competence.
12. Plan field trip/visit to relevant industries to enhance learner's interest and motivation.

National Vocational and Technical Training Commission (NAVTTTC)

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