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Norwegian Embassy
Islamabad

POST PRESS OPERATIONS (Packaging)

Learner Guide

National Vocational Certificate Level 3

Version 1 - December 2019

NAVTTC

Implemented by
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Published by
National Vocational and Technical Training Commission
Government of Pakistan

Headquarter
Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan
www.navttc.org

Responsible
Director General Skills Standard and Curricula, National Vocational and Technical Training Commission
National Deputy Head, TVET Sector Support Programme, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Layout & design
SAP Communications

Photo Credits
TVET Sector Support Programme

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This document has been produced with the technical assistance of the TVET Sector Support Programme, which is funded by the European Union, the Federal Republic of Germany and the Royal Norwegian Embassy and has been commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in close collaboration with the National Vocational and Technical Training Commission (NAVTTC) as well as provincial Technical Education and Vocational Training Authorities (TEVTAs), Punjab Vocational Training Council (PVTC), Qualification Awarding Bodies (QABs)s and private sector organizations.

Document Version
December, 2019
Islamabad, Pakistan

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Introduction:

This Learner's Guide is developed on the basis of competency standards and curriculum of "Post Press Operations".

The National Vocational & Technical Training Commission (NAVTTC) has developed a national qualification entitled, "National Vocational Certificate Level-3 in Post press Operations (Post Press Operator)". Relevant industry and employers were consulted in the design and validation processes in order to come up with a national qualification that fulfills the requirements of the sector in general and the occupation in particular.

This book covers all the topics in a clear and organized format for the Post Press students. Through learning outcomes practical activities were added step by steps. The topics covered were neatly illustrated for better understanding of the learners. All of the lesson pages were carefully designed to eliminate distraction and to focus the pupil's full attention on the work at hand.

It carries 4 learning modules which are as under:

Module 1- Perform Die cutting operation

Module 2- Perform Waste Management

Module 3- Perform Embossing

Module 4- Develop professionalism

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Module-1

Module 1: - Perform Die Cutting Operation

Learning Outcomes:

After completion of this module the learner will be able to:

LU1: Perform Substrate handling

LU2: Verify Die as per dockets

LU3: Make ready workstation for die cutting operation.

LU4: Perform die cutting operation

LU5: Perform post production activity

LU6: Maintain log Book.

Learning Unit - :

LU 1: Perform substrate handling

Overview: The purpose of this learning unit is to inform the learner about side lay and front lay and their importance.

Side lay and front lay:

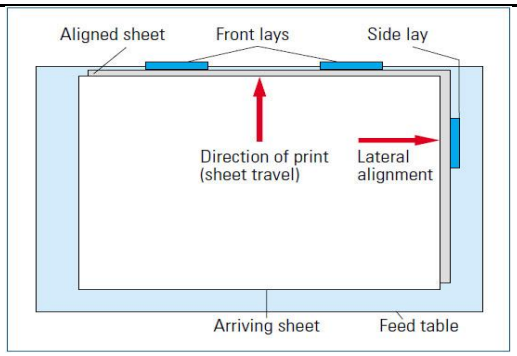
- The purpose of side lay is to keep a perfect registration of the substrate from the pin side.
- The purpose of front lay is to keep a perfect handling of the substrate from the front lay side

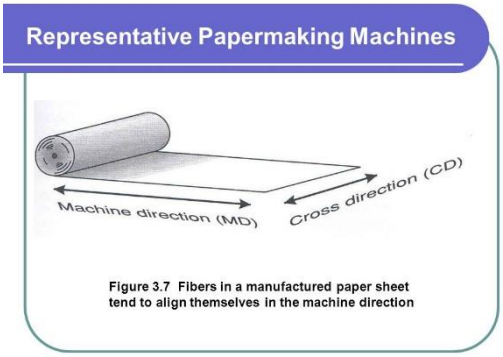
Importance of substrate (paper) Stacking:

The purpose of this learning unit is to inform the learner about stacking by proper fanning of substrate.

Purpose of fanning: Purpose of fanning is to avoid paper static charging. It also separates the paper.

Module: 1	**Perform Die Cutting operation**	
	Learning Unit: 1	**Perform Substrate handling**
	Practical Description:	Perform startup operation by gathering initial information about the substrate and rare to stack.
Time:	14 hours	
Equipment	Die cutting machine	
Tools	GSM cutter, weighing scale, Micrometer, Measuring scale, Docket	
PPE	Uniform and safety shoes.	
Materials	Handout on related topic, Paper and board	
Key Point	Gathering basic knowledge production material before starting the job.	
Learning Outcome:	• Verify side-lay & front-lay of the printed substrate • Verify the GSM of the substrate as per docket. • Verify thickness of substrate as per docket. • Verify substrate size as per docket. • Verify the grain of substrate as per docket. • Perform Substrate Stacking as per instruction.	
Precautions:	Ensure to wear the uniform and safety shoes before starting this process	

Instructions	**Illustrations**
1. Pick up a sheet and see the long side of the sheet is side lay and the short side of the sheet is front lay. Also check the job docket to verify the front lay and side lay of the sheet.	

2. To check the grain direction, curve the sheet (longer side) and check the stiffness if it is hard or soft. Change the side and repeat the procedure again. The side which is soft will be machine grain direction and side which is stiff will be cross machine direction grain.	
3. Use a GSM cutter and cut a sample. Place it on a weighing scale and note down the reading.	
4. Cut a small paper/board 5cmx5cm put it inside the micrometer and check the thickness. Note the reading on the sample.	
5. Bring the board next to the machine, fan the paper and stack it on the machine feeder. Counting will be done by the machine.	

Learning Unit - :

LU 2: Verify Die as per dockets

Overview: Creasing matrix is a consumable system widely used for **crease** forming cardboard in the production packaging, carton and box forming industries.

Purpose of using creasing matrix:

Creasing matrix was created as a solution to aid easier set-up of a die-cutter and creasing template layout. Creasing matrix is a system that self-aligns the creasing matrix base with the creasing rule therefore imparting a perfectly registered crease to solid or corrugated board. Before the use of creasing matrix the process was set-up by hand in a method that is extremely time-consuming. Creasing matrix are essential in today's requirements for fast preparation and turn around in modern print finishing industries where cost effective solutions and tight deadlines are demanded. Creasing matrix reduces downtime of the die-cutting machine by enabling assured accurate location of the creasing rule and creasing base on the first attempt.

The self-locating ability of a creasing matrix ensures a precise register between creasing rule die cutting plate and matrix creasing base plate allowing for more complex packaging designs to becoming possible from die-cutting machines. Creasing and die-cutting is usually done at the same time by the same die-cutting plate eliminating the need for two passes through a die press. Different profiles of creasing matrix are available to enable creases to be created very close to the die cut edges and cut windows in the cardboard.

Different types of crease can also be generated by using a double creasing matrix or chamfered base profile specifically for corrugated cardboard which has the benefit of reducing damage to a heavily inked surface of the cardboard. The printed surface of the cardboard packaging can also be protected by utilizing a reverse creasing matrix to eliminate contact between the creasing rule and the inked surface generating the fold on the backside of the cardboard or to produce a concertina fold in one pass of the die press.

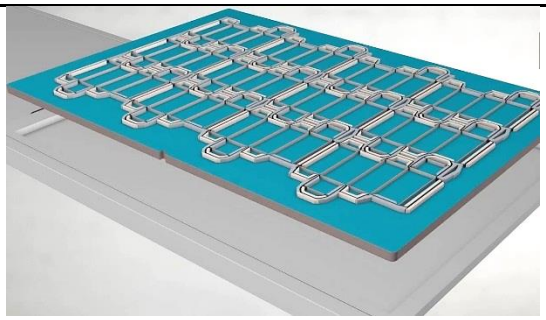
Creasing matrix set up on a die cutting template:

The creasing matrix strip is trimmed to the length of each crease rule in the crease pattern and applied over the crease rules in the die cutting plate. The matrix locator grips the creasing rules with the plastic shoulders and the base profile adhesive side facing upwards. Chamfering the cut to 45 degrees on the end of the creasing matrix when trimming them to match the length of the rues ensures precise folds are produced into the corners of adjacent fold lines.

Once all the creasing matrix are positioned on the creasing rules the adhesive backing tape is removed from the matrix bases. The die cutting plate is then set in the die press with the creasing base plate and the two are pressed together. This transfers the creasing matrix base to the creasing base plate, automatically self-locating, creating perfect alignment between the creasing rules and the creasing channels in the matrix

base. The creasing rule alignment locators can then be removed from the creasing matrix bases.

Calculating the correct creasing matrix to use for the card material and thickness required is important to achieve the desired finish. Creasing matrix come in a vast range of measurements with corresponding crease channels for the creasing rule thickness and variations in base profiles for any crease layout design. Color coding of profiles and data sheet guides provide easy look up and identification of the creasing matrix available for any project.

<table>
<tr><td rowspan="3">Module: 1</td><td colspan="2">Perform Die Cutting operation</td></tr>
<tr><td>Learning Unit: 2</td><td>Verify Die as per dockets</td></tr>
<tr><td>Practical Description:</td><td>Identify the die as per docket and perform the job accordingly.</td></tr>
<tr><td>Time:</td><td colspan="2">24 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">Die cutting machine</td></tr>
<tr><td>Tools</td><td colspan="2">Die, Creasing matrix</td></tr>
<tr><td>PPE</td><td colspan="2">Uniform, safety shoes.</td></tr>
<tr><td>Materials</td><td colspan="2">Handout on related topic, Paper and board</td></tr>
<tr><td>Key Point</td><td colspan="2">Cutting and creasing must be perfect.</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Verify the die ups as per docket
• Verify creasing matrix requirement as per thickness of the substrate.</td></tr>
<tr><td>Precautions:</td><td colspan="2">Ensure the die must be proper fixed on machine frame.</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Check the job and verify die up’s are as per job and job docket.</td><td>  </td></tr>
</table>

2. Select the creasing matrix as per thickness of the board and job requirement.
   See below chart for selection of crease matrix.

S.no	Board Thickness	Matrix Selection
1	0.25 mm	0.3x0.8 mm
2	0.30 mm	0.3x1.2 mm
3	0.35 mm	0.4x1.2 mm
4	0.40 mm	0.4x1.3 mm
5	0.45 mm	0.5x1.4 mm

Learning Unit - :

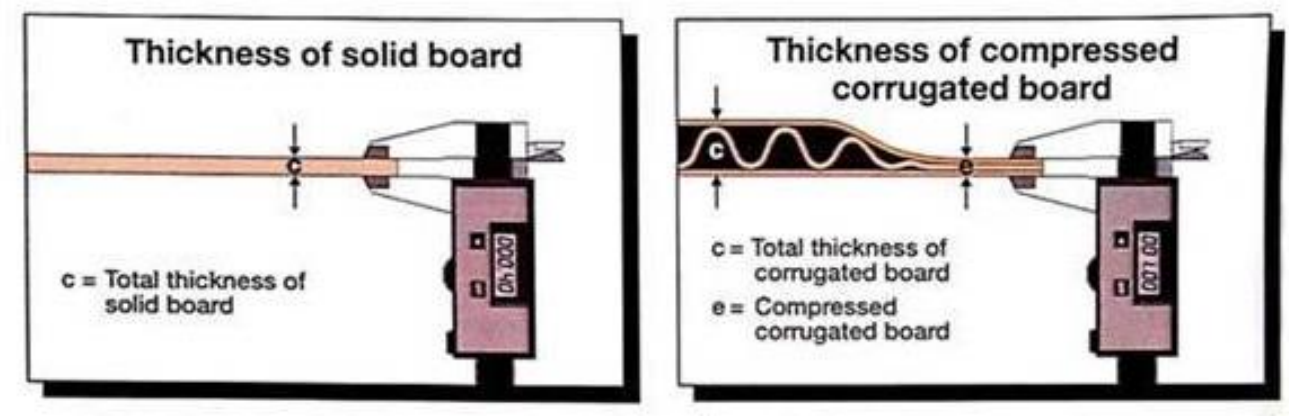
LU 3: Make ready workstation for die cutting operation

Overview: The purpose of this learning unit is to understand on what board thickness you will use what creasing matrix, what rule height and what rule thickness.

Importance of creasing, rule thickness and height:

Calculate the rule thickness and height of crease rule and creasing matrix

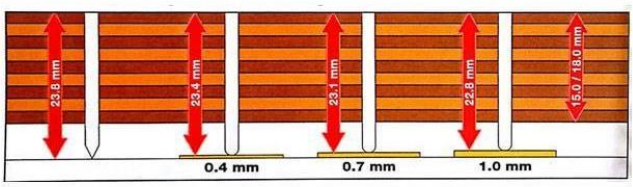
Firstly, in order to be able to select the proper creasing system it requires some details on the material to be cut and the cutting tool to be used. The material thickness is essential for the determination of all further parameters. In this connection it has to be taken into account that in order to determine the thickness of substrate, it has to be compressed; because only the remaining residual height is relevant for the calculation.



Necessary height of creasing rule

In our example we start out from a standardized cutting rule height of 23.6mm. Today, in most countries this standardized cutting rule height is used. Only a few Asian countries a standardized cutting rule height of 23.6mm finds application; as a result, the creasing rule heights applied in these countries are accordingly lower.

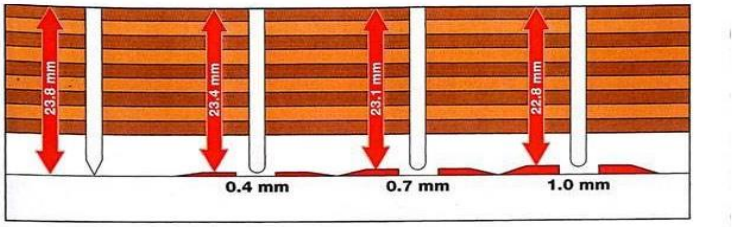
Normally plywood plates of a thickness of 18mm are used for cutting dies applied for folding- boxes, and plywood plates of a thickness of 15mm are used for converting corrugated board. However, there are some markets where these values may vary. In



order to determine the correct creasing rule height of a cutting die the thickness of the material to be cut has to be deducted from the cutting rule height.

As displayed in our graphical examples, in the case of a material to be cut of 0.4 mm and a cutting rule height of 23.8 mm there results a creasing rule height of 23.4 mm; correspondingly, in the case of a thickness of the material to be cut of 1 mm and a cutting rule height of 23.8 mm a creasing rule of 22.8 mm is to be used. Minor deviations from this principle can be compensated for by using correspondingly higher or lower creasing systems.

Necessary height of creasing rule



The difference in height between cutting and creasing rules is compensated for by the creasing matrix, i.e., in the case of a creasing rule height of 23.4 mm a creasing system with a height of 0.4 mm is to be used. If a creasing rule of 22.8 mm is used, the height of the creasing system is to be one mm. The creasing rule heights have a decisive influence on the quality of the packaging to be cut. If the creasing rules are too high, relative to the material to be cut, this will inevitably cause considerable disturbances in the production process. On the one hand, a perfectly marked creasing is no longer possible, and on the other, due to too high a creasing rule in combination with accordingly too thick a material, the whole cutting die is blocked and the outer cutting rules are not able to cut cleanly. This causes fraying of the material and increased formation of cutting-dust.

Necessary width of creasing rule

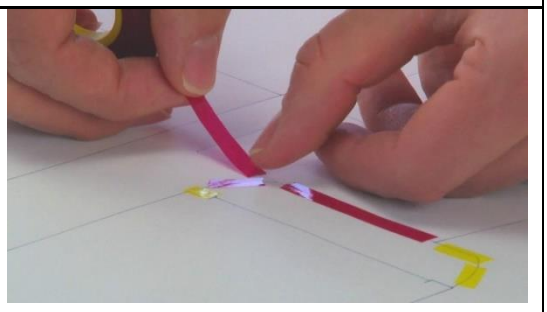
Of course, when calculating the correct creasing channel width the thickness of the creasing rules has to be taken into account as well. Basically, 5 different creasing rule thicknesses find application. They are, on the one hand, defined by point- sizes and on the other they are also indicated in mm. The width of the used creasing rule has to correspond with the material to be cut, too.

The thumb rule is: one should never try to die cut a material with a creasing rule that is thinner than the material to be cut. Hence it follows that even in the case of a material thickness of approx. 0.6 mm it is recommended to change over from a 2- point-rule (0.7 mm) to a 3-point-rule (1.05 mm). In the case of corrugated board one should basic ally use at least a 3-point-rule.

Purpose of fanning: Purpose of fanning is to avoid paper static charging. It also separates the paper.

<table>
<tr><td rowspan="3">Module: 1</td><td colspan="2">Perform Die Cutting operation</td></tr>
<tr><td>Learning Unit: 3</td><td>Make ready workstation for die cutting operation</td></tr>
<tr><td>Practical Description:</td><td>To ensure the paper setting of feeder from feeder to delivery without any hurdle.</td></tr>
<tr><td>Time:</td><td colspan="2">40 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">Die cutting machine</td></tr>
<tr><td>Tools</td><td colspan="2">Allen key set, Spanner set, Scissor, Die rubber, Nicking tool, Wood hammer, Die, Die cutting</td></tr>
<tr><td>PPE</td><td colspan="2">Uniform and safety shoes.</td></tr>
<tr><td>Materials</td><td colspan="2">Handout on related topic and box board in different GSM.</td></tr>
<tr><td>Key Point</td><td colspan="2">Gather knowledge about paper setting of feeder and delivery.</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Perform nicking on cutting blade as per instruction
• Set the die rubber on to the die
• Mount the die on to the machine chase.
• Mount machine chase on die cutting machine
• Set the creasing matrix on the creasing rule.
• Make impression setting of die with the help of cutting paper/Carbon paper
• Perform Substrate Stacking in to the feeder
• Adjust the head-lay & the side-lay
• Adjust the impression as per job requirement
• Adjust the feeder according to the job
• Perform test run</td></tr>
<tr><td>Precautions:</td><td colspan="2">Ensure that the substrate smoothly running from feeder up to delivery.</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
</table>

1. Decide on layout where you want to do the nicking with the help of nicking tool. Make the nicks on the cutting plate.	
2. Select the rubber you want to install on the die. Cut the rubber as per size of all the cutting rules in the die use glue to mount the die rubber.	
3. Mount the die on the chase, place the front lay of the die parallel to the chase front lay. Use fitting and fixtures to mount the die on the chase.	
4. Make machine come to correct position to place the chase in the machine chase location.	

5. Cut all the creasing matrix as per size of the crease in the die. Mount the creasing matrix on the creasing rule with the help of locator which is on the creasing matrix. Peel the release the paper from the creasing matrix and take impression. Make sure your impression plate screen and free from grease.	
6. To make the impression setting mount a key line impression on the die. Do the necessary adjustment of the cutting pressure with the help pf patching tape (Cheypi).	
7. Mount the die cutting material on the feeder after fanning and make the pile align parallel to the machine marks place on the feeder. Ensure the pile is centered.	
8. Adjust the machine front lay and side lay as per job requirement.	

9. Adjust the impression and slowly increase as per job requirement.	
10. Adjust the feeder according to the job and perform test run.	

Learning Unit - :

LU 4: Perform die cutting operation

Overview: Die cutting typically refers to the cutting action of a die press. When a die is pressed into a material such as folding carton board or corrugated board for packaging or leather for making shoes it cuts the material into the shape outlined by the die. It can also refer to the process of making the die itself.

Die cutting operation

Die cutting generally uses traditional machines that may be up to a century old. Steel cutting, creasing and perforating rules, secured in a wooden block, are used to cut or crease a substrate into a particular shape, using pressure.

Used for cutting out boxes, folders, and pockets, creasing more complex folds, or perforating, Die Cutting can help to create many special shapes, curved edges, or bespoke apertures. We are also able to Kiss Cut or Die Cut partially through a substrate, which is great for self-adhesive labels when required on a sheet. Really intricate shapes require Laser Cutting or use of a Flexo Die.

Die cutting typically refers to the cutting action of a die press. When a die is pressed into a material such as folding carton board or corrugated board for packaging or leather for making shoes it cuts the material into the shape outlined by the die.

It can also refer to the process of making the die itself. Die-cutting tooling is fundamentally a combination of wood, steel blade and rubber prepared into a specific shape and structure to enable compression of substrate materials and hence forming of specific shapes – mainly boxes.
In this process of die manufacturing the skill of the technician in forming the die is paramount. High tech laser cutting systems are used to create the precision cut into the plywood backing but accurate bending, shaping and preparing the steel rule is of paramount importance.

'Knifing' the die can also involve preparing a variety of complex cut types and patterns to be made such as scoring, tear-strips etc. Scoring can be further used to create a number of complex functions such as tamper-proof seals which have become important in the packaging industry.

Creasing is also incorporated into the die to produce the fold positions of boxes and cartons. Rather than crease the products on a separate machine after the cuts have been made, creasing them in the cutting phase means they are usually more accurate and this facilitates high speed gluing and better performance on automatic packing lines.
The design of the die outline requires a lot of experience and knowledge also. A 2 dimensional drawing and tool have to be visualized as a 3 dimensional end product.

Computer Aided Design programs make this task a little easier than it would have been previously.

Computer modelling can also make improvements in efficiency, producing less cut-off and waste. This provides substantial savings for the producer over time as die cutting runs reach into six, seven and eight figure numbers. There is a double saving in the form

of various national and international directives on waste that require a manufacturer to pay in advance for any products they produce that will ultimately need to be recycled.

<table>
<tr><td rowspan="3">Module: 1</td><td colspan="2">Perform Die Cutting operation</td></tr>
<tr><td>Learning Unit: 4</td><td>Perform die cutting operation</td></tr>
<tr><td>Practical Description:</td><td>Perform die cutting and creasing to separate from up till delivery.</td></tr>
<tr><td>Time:</td><td colspan="2">160 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">Die cutting machine</td></tr>
<tr><td>Tools</td><td colspan="2">Die cutting machine, Substrate</td></tr>
<tr><td>PPE</td><td colspan="2">Uniform and safety shoes.</td></tr>
<tr><td>Materials</td><td colspan="2">Handout on related topic, paper and board.</td></tr>
<tr><td>Key Point</td><td colspan="2">Ensure the quality of cutting and creasing during operation.</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Get approval from the supervisor
• Carry out cutting operation as per instruction
• Check & maintain the quality of die cutting</td></tr>
<tr><td>Precautions:</td><td colspan="2">Ensure that the ups should not be separate from the sheet and delivered properly.</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Get following approval from the supervisor before starting the job:
a) Registration
b) Proper cutting
c) Proper creasing
d) Proper perforation
e) Proper alignment of the box</td><td rowspan="2">  </td></tr>
<tr><td colspan="2">2. Take out two set of sheets from each pile one in the center and one from the top.
Check the following points:
a) Registration
b) Proper cutting
c) Proper creasing
d) Proper perforation
e) Proper alignment of the box</td></tr>
</table>

Learning Unit - :

LU 5: Perform post production activity

Overview: The purpose of this learning unit is to inform the learner about importance of the cleaning after work.

Describe the importance of maintaining/cleaning of work station

Cleaning and tidiness can help control or eliminate workplace hazards. Poor housekeeping practices frequently contribute to incidents.

Effective cleaning is an ongoing operation: it is not a one-time or hit-and-miss cleanup done occasionally. Periodic "panic" cleanups are costly and ineffective in reducing incidents.

The workplace environment influences employees' productivity, performance and well-being. No matter the industry, maintaining a clean workplace may help keep staff members safe, healthy and efficient. However, busy production schedules and increasing workloads may cause standards to dip.

While it may be tempting to put off dusting or other types of cleaning around the office or worksite, doing so may put employees at risk of suffering an injury or illness and may even impact performance levels. Maintaining a clean workplace is vital for employers to reduce their workers compensation claims and keep efficiency high.

Essential to safety

When employees work in a messy environment, they may not notice all hazards, which increases the risk of an accident. According to the Occupational Safety and Health Administration (OSHA), an occupational hazard is anything in the workplace that may cause harm. An occupational hazard is commonly caused by neglect on the part of the employer or a lack of awareness by workers. When the office or worksite isn't clean, it may increase the chance that a hazard will go unnoticed by a supervisor and staff members.
For example, if equipment is placed along an emergency route, workers may become injured if they trip or fall over it because it is out of place. If boxes aren't stacked properly, they may fall on a worker and cause an injury. Employers may want to remember to keep the workplace free of debris and remind workers to put all equipment, such as personal protective equipment (PPE), in designated places to prevent an accident.

Crucial to health

Flu season is rapidly approaching and workplaces may see an increase in the number of employees using sick days if they become ill. According to Kimberly-Clark Professional, germs can spread quickly through the workplace if supervisors and employees don't adequately sanitize their hands and their workspaces. Commonly used spaces, such as break rooms, can be hot spots for germs to accumulate.
According to Kimberly-Clark, break rooms have been found to have approximately 20,951 germs per square inch. Parts of the break room that tend to be touched the most, such as doorknobs, microwave oven handles and sinks, can be ripe with germs. Employers may want to clean these places on a frequent basis, and daily during flu season.

Another common health hazard of unclean workplaces is the germination of mold. According to OSHA, mold can cause adverse health effects for employees who are exposed to mold spores. Mold is a fungi that can release millions of spores into the air and can cause respiratory illnesses. Because of this, OSHA has strict standards employers are asked to follow to prevent the growth of mold in the workplace. According to OSHA, mold germination occurs in warm and humid conditions, making it essential that employers regularly clean worksite facilities, such as bathrooms, to reduce the chance of mold growth. Employers also may want to replace or clean indoor air filtration systems frequently to ensure any mold spores that are released into the air don't reach workers.
As a result, a messy or unhygienic workplace may influence worker productivity. If employees receive an injury or illness at work, they may not be able to perform their tasks as well as when they were healthy. This decrease in efficiency may cause deadlines to be missed and additional errors to occur.

Module: 1	**Perform Die Cutting operation**	
	Learning Unit: 5	**Perform post production activity**
	Practical Description:	Ensure cleanliness after completion of the job.
Time:	08 hours	
Equipment	Die cutting machine	
Tools	Scraper and blade	
PPE	Uniform, safety shoes, gloves and goggles	
Materials	Handout on related topic and cleaning chemical	
Key Point	To save time and to ensure long lasting of machine.	
Learning Outcome:	• Remove the die and cutting plate from the machine as per instruction • Clean the cutting plate as per instruction • Remove the pile form feeder and delivery. • Clean the machine & workplace	
Precautions:	Ensure safety as required with use of PPE'S as per SOP.	

Instructions	**Illustrations**
1. Make machine come to the correct position to pull out the chase from the machine. Remove the impression plate.	
2. Remove the die from the chase and place it on the rack. Place all the proper fitting and fixtures back to its allocated position.	

3. Clean the cutting plate with the help of chemical and scraper. Ensure safety of yourself.	
4. Remove the pile from feeder and delivery with tagging of material. Clean the machine and the workplace.	

Learning Unit - :

LU 6: Maintain log Book

Overview: The purpose of this learning unit is to inform the learner about importance of record keeping.

Importance of record keeping:

A key part of any preventive maintenance program is proper documentation of the work completed, ideally recorded directly into an electronic format, but also on paper. This can reduce the number of expensive repairs, increase operator accountability, make warranty claims easier, increase operator safety, identify trends, enhance visibility of individual asset health, and have significant positive impact on resale value. Proper record keeping also helps in many managerial operation such as analyzing production activity, workforce deliverables and employee evaluation based on KPIs.

<table>
<tr><td rowspan="3">Module: 1</td><td colspan="2">Perform Die Cutting operation</td></tr>
<tr><td>Learning Unit: 6</td><td>Maintain log Book</td></tr>
<tr><td>Practical Description:</td><td>To record the time data during process.</td></tr>
<tr><td>Time:</td><td colspan="2">06 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">Die cutting machine</td></tr>
<tr><td>Tools</td><td colspan="2">Notes and file</td></tr>
<tr><td>PPE</td><td colspan="2">Uniform, safety shoes, gloves</td></tr>
<tr><td>Materials</td><td colspan="2">Handout on related topic and Log book.</td></tr>
<tr><td>Key Point</td><td colspan="2">Proper maintaining and filling of the log book.</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Record the final counter along-with the wastages
• Record downtime during die cutting operation</td></tr>
<tr><td>Precautions:</td><td colspan="2">Ensure recorded data must be neat written.</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Fill and record the log book.
Ensure following records are filled:
a) Total counter
b) Wastage
c) Down Time
d) Any other remarks</td><td>  </td></tr>
</table>

Summary of the Module

In this module learner can learnt about side lay and front lay as the present invention relates to an apparatus for performing position control of a side lay used for regulating a right-and-left position of paper fed to a sheet-fed printing press.

In the conversion of paperboard the die-cutting and creasing operations are usually performed simultaneously in the flat-bed die-cutting station.

To achieve a consistent, accurate result, it is important to choose the right tools, machine settings, types of paperboard and conditions for the paperboard.

A good cut should be clean and free from loose fibers and particles. This will give accurate and clean edges and avoid contamination problems during further processing of the paperboard or in the packaging operation.

Die-cut blanks remain linked to one another by nicks.

To prevent unwanted separation of the sheet during the transfer to subsequent stations, the strength of specific nicks is of great importance for a high production rate. At the same time it is important that the paperboard blanks can be easily separated in the stripping operation, which removes the paperboard waste.

Having an optimum nick quality is necessary in order to achieve the best result regarding these two contradictory needs and to obtain a clean and clear cut.

Frequently Asked Questions (FAQs)

Question	Answer
1. What is the purpose of side lay and front lay?	The purpose of side lay is to keep a perfect registration of the substrate from the pin side. The purpose of front lay is to keep a perfect handling of the substrate from the front lay side
2. What is the purpose of fanning?	Purpose of fanning is to avoid paper static charging. It also separates the paper.
3. What should we do to check the green direction?	To check the green direction, curve the sheet (bigger side) and check the stiffness if it is hard or soft. Change the side and repeat the procedure again.
4. Describe the purpose of using creasing matrix?	Creasing matrix was created as a solution to aid easier set-up of a die-cutter and creasing template layout.
5. Explain the creasing matrix set up on a die cutting template	The creasing matrix strip is trimmed to the length of each crease rule in the crease pattern and applied over the crease rules in the die cutting plate.
6. Define Die cutting operation?	Die cutting generally uses traditional machines that may be up to a century old. Steel cutting, creasing and perforating rules, secured in a wooden block, are used to cut or crease a substrate into a particular shape, using pressure.
7. How to perform die cutting and creasing to separate from up till delivery.	Take out two set of sheets from each pile one in the center and one from the top. Check the following points: a) Registration b) Proper cutting c) Proper creasing d) Proper perforation e) Proper alignment of the box
8. Describe the importance of maintaining/cleaning of work station	Cleaning and tidiness can help control or eliminate workplace hazards. Poor housekeeping practices frequently contribute to incidents.

9. What is importance of record keeping?	A key part of any preventive maintenance program is proper documentation of the work completed, ideally recorded directly into an electronic format, but also on paper.
10. How to maintain log Book?	Ensure following records are filled: a) Total counter b) Wastage c) Down Time d) Any other remarks

Self-Assessment

(MCQs)

Please mark the correct one from the given options. You can check your answer with the Answer Key at the end of this module

1. The workplace environment influences employees' by, _____.
    a) Productivity
    b) Performance
    c) Well-being
    d) All of above

2. Effective cleaning is an_____, it is not a one-time or hit-and-miss cleanup done occasionally.
    a) Ongoing process
    b) Twice in a day
    c) Thrice in the day
    d) Fortnight

3. Computer modeling can also make _____ in efficiency, producing less cut-off and waste.
    a) Provisions
    b) Improvements
    c) Productivity
    d) None of above

4. _____ can also involve preparing a variety of complex cut types and patterns to be made such as scoring, tear-strips etc.
    a) Humidity
    b) Creasing
    c) 'Knifing' the die
    d) None of above

5. Die cutting generally uses _____ machines that may be up to a century old.
    a) Traditional
    b) Modern
    c) Partial
    d) None of them

6. Once the entire creasing matrix is _____ on the creasing rules the adhesive backing tape is removed from the matrix bases.
    a) Positioned
    b) Fixed
    c) Implemented
    d) All of above

7. _____ is usually done at the same time by the same die-cutting plate eliminating the need for two passes through a die press.
    a) Creasing and die-cutting
    b) Creasing and folding
    c) Creasing and humidity
    d) None of above

8. _____ is a system that self-aligns the creasing matrix base with the creasing rule therefore imparting a perfectly registered crease to solid or corrugated board.
    a) Folding matrix
    b) Creasing matrix
    c) Die cutting matrix
    d) None of them

9. Mount the _____ on the feeder after fanning and make the pile align parallel to the machine marks place on the feeder. Ensure the pile is centered.
    a) Pasting material
    b) Folding material
    c) Die cutting material
    d) All of them

10. The _____ is then set in the die press with the creasing base plate and the two are pressed together.
    a) Matrix base
    b) Backing tape
    c) Die cutting plate
    d) None of them

Answer Key

MCQ No.	Correct Answer
1	d
2	a
3	b
4	c
5	a
6	a
7	a
8	b
9	c
10	c

POST PRESS OPERATIONS (Packaging)

Learner Guide

National Vocational Certificate Level 3

Version 1 - December 2019

Module-2

Module 2: - Perform Waste Management

Learning Outcomes:

After completion of this module the learner will be able to:

LU1: Manage Post press waste

LU2: Handle toxic chemicals Handle

LU3: Non-toxic chemicals

LU4: Manage solid waste

Learning Unit - :

LU 1: Manage Post press waste

Overview: This learning unit describes the types of post press waste and safety precautions which have to be in consideration to manage printing waste. It also defines the methods of printing press waste control.

Printing press waste:

It is important to note that waste differ from process to process and the methods of reducing waste in one printing process do not necessarily apply to other printing processes.

There are three major waste streams found in the printing industry:

i. **Solid waste** – in general printing environment solid waste could consist of the following: empty containers, used film packages, outdated materials, damaged plates, developed films, test production, bad printing or spoilage, damaged product, and scrap paper

ii. **Water waste** – water waste from printing operations may contain lubricating oils, waste ink, clean-up solvents, photographic chemicals, acids, alkaline, and plate coatings

Air emissions – some printing operations produce volatile organic compound emissions from the use of cleaning solvents and inks, as well as alcohol and other wetting agents used in printing.

Safety precautions to manage printing waste:

Printing industry can use a variety of ways to reduce the amount of waste they generate while increasing their operational efficiency. Best management practices create the most cost-effective way to decrease the amount of waste generated from operations. This includes a careful control of raw materials, practical scheduling, and job management.

Another potential hazardous waste reduction technique for printing presses, requires good housekeeping. Good housekeeping measures can greatly decrease the amount of waste that a press generates.

To reduce excess waste production, printing presses should:

(a) Make sure container lids are tight fitting whenever they are not in use to prevent loss of chemical through evaporation or spoilage. Keeping lids on containers also prevents contamination with water, dirt, or other materials

(b) Use spigots and pumps when dispensing new materials and funnels when transferring waste to storage containers to reduce the possibility of spills

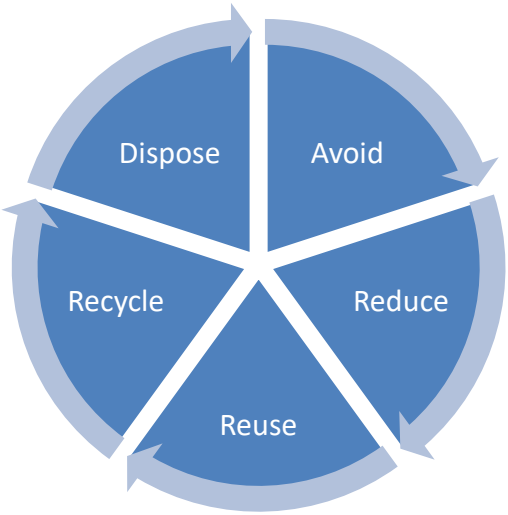
(c) Store products in locations that will preserve their shelf life. For instance, solvents should be kept in locations protected from extreme temperatures

(d) Never mix different types of waste together. Mixing wastes may make recycling impossible or make waste disposal more expensive

(e) Keep printing floor clean and orderly to prevent accidents and spills.

Methods of printing press waste control:

Waste avoidance generally delivers the best financial and environmental outcomes. The waste management provides a framework for managing waste: avoid; reduce; reuse; recycle; and dispose.



Following are various methods to reduce waste in print presses:

1. Management Commitment

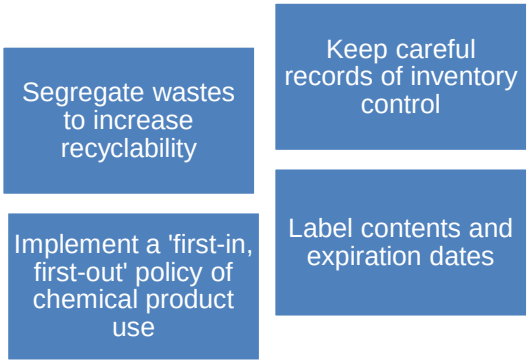
An important aspect of any waste reduction program is management commitment. Commitment shows employees that managers place a high priority on waste reduction.

2. Employee Awareness

Hazardous waste reduction efforts should be emphasized to each employee, from the general manager to machine operators.

3. Good Housekeeping

Good housekeeping comprises of:



Waste Reduction Alternatives for Inks

- Fill ink duct only enough for a single run or shift
- Run similar jobs simultaneously to reduce waste generation between cleanup and start of the next run
- Use water-based inks whenever possible to cut down on the use of solvent based inks that cause employee and environmental hazards
- Clean ink fountains only when changing colors or when the ink might dry out between runs to reduce waste ink generation

4. Solvent Alternatives

- Use soap or detergent solutions wherever possible
- Use solvents only for cleaning inks and oils
- Minimize spills and use dry methods for cleanup wherever possible

5. Substrate waste reduction

- Optimize substrate size to minimize excess trim
- Manage stock and ordering to minimize waste
- Use the blank side of used papers for press set up instead of new sheets

Practical Activity 1/1:

<table>
<tr><td rowspan="3">Module: 2</td><td colspan="2">Perform Waste Management</td></tr>
<tr><td>Learning Unit: 1</td><td>Manage Post press waste</td></tr>
<tr><td>Practical Description:</td><td>Sort and maintain the waste generated at the workplace according to usability with maintaining its record.</td></tr>
<tr><td>Time:</td><td colspan="2">06 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">Die cutting machine</td></tr>
<tr><td>Tools</td><td colspan="2">N/A</td></tr>
<tr><td>PPE</td><td colspan="2">Uniform, Safety shoes, Gloves</td></tr>
<tr><td>Materials</td><td colspan="2">Waste bin or containers</td></tr>
<tr><td>Key Point</td><td colspan="2">Gathering basic knowledge for sorting waste material at workplace and maintain its record keeping.</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Sort the waste generated at the workplace according to usability
• Tag the reusable components/item of the waste
• Maintain record of reusable components of the waste
• Reduce the waste generation in routine work by reuse the categorized waste as per requirement.
• Handle hazardous waste as per instruction.</td></tr>
<tr><td>Precautions:</td><td colspan="2">Sort & Handle the waste material carefully</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Collect all the waste generated at workplace.</td><td>  </td></tr>
</table>

2. Sort out unusable articles	
3. Place unusable articles at appropriate place and label it.	
4. Dispose of waste in a proper way.	
5. Record all reusable waste articles in a register	

Learning Unit - :

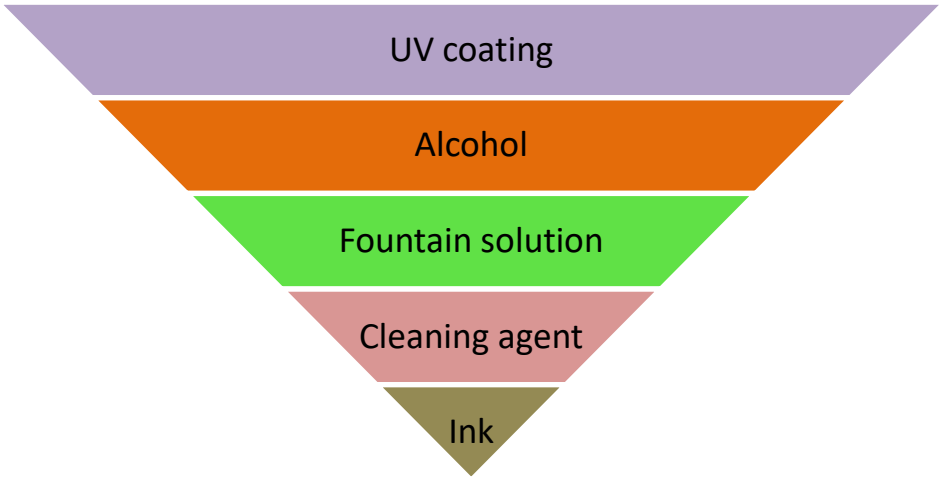
LU 2: Handle toxic chemicals

Overview: This learning unit defines about the different types of toxic materials, and their respective management techniques.

Toxic chemical:

A toxic substance is a substance that can be poisonous or harmful on human contact. Products that we use daily, such as cleaners, alcohol, oil can also be toxic. Any chemical can be toxic or harmful under certain conditions.

Potentially harmful chemicals used in Printing:



Procedure of toxic chemical management:

Here are some ground rules that can be useful to have while at work to ensure safe handling of toxic chemicals:

- Follow all established procedures and perform job duties as per training.
- Be cautious and plan ahead. Think about what could go wrong and pay close attention to what you're doing while you work.
- Always use required PPE (Personal Protective Equipment) and inspect them carefully before each use to make sure it's safe to use. Replace worn out or damage PPE; it won't provide adequate protection.
- Make sure all containers are properly labeled and that the materials are contained in an appropriate container. Report any damaged containers or illegible labels to your supervisor.

- Read labels and the material safety data sheet (MSDS) before using any material to make sure you understand hazards and precautions.

- Use all materials solely for their intended purpose. Don't, for example, use solvents to clean your hands, or gasoline to wipe down equipment.

- Never eat or drink while handling any materials, and if your hands are contaminated.

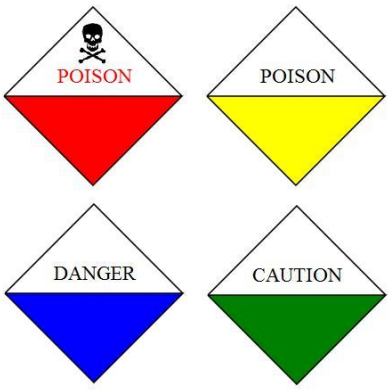
- Keep yourself and your work area clean. After handling any material, wash your hands thoroughly with soap and water. Clean work surfaces at least once a shift so that contamination risks are minimized.

- Learn about emergency procedures and equipment. Understanding emergency procedures means knowing evacuation procedures, emergency reporting procedures, and procedures for dealing with fires and spills. It also means knowing what to do in a medical emergency if a co-worker is injured or overcome by chemicals.

- Learn the appropriate use of safety equipment provided. For example; which fire extinguisher is used for which class of fire?

Type (Fire / Extinguisher)	CLASS A **Combustible materials** (e.g. paper & wood)	CLASS B **Flammable liquids** (e.g. paint & petrol)	CLASS C **Flammable gases** (e.g. butane and methane)	CLASS D **Flammable metals** (e.g. lithium & potassium)	**Electrical** **Electrical equipment** (e.g. computers & generators)	CLASS F **Deep fat fryers** (e.g. chip pans)	**Comments**
Water	✓	✗	✗	✗	✗	✗	Do not use on liquid or electric fires
Foam	✓	✓	✗	✗	✗	✗	Not suited to domestic use
Dry Powder	✓	✓	✓	✓	✓	✗	Can be used safely up to 1000 volts
CO2	✗	✓	✗	✗	✓	✗	Safe on both high and low voltage
Wet Chemical	✓	✗	✗	✗	✗	✓	Use on extremely high temperatures

Module: 2	**Perform Waste Management**	
	Learning Unit: 2	**Handle toxic chemicals**
	Practical Description:	Tagging and storing of toxic waste chemical containers at designated place
Time:	06 hours	
Equipment	Die cutting machine	
Tools	N/A	
PPE	Uniform, Safety shoes, mask, Gloves	
Materials	Toxic Chemical waste containers	
Key Point	Keep tagging, storing and handling of toxic material carefully.	
Learning Outcome:	• Tag containers of toxic chemical as per instruction. • Store toxic waste at designated place. • Manage Inflammable toxic chemical waste as per instruction. • Manage non- inflammable toxic chemical waste as per instruction.	
Precautions:	Ensure the safety	

Instructions	**Illustrations**
1. Prepare tags for waste chemicals.	
2. Place containers of toxic waste at a safe place carefully.	

3. Tag the toxic containers accordingly	
4. Store the toxic waste at its proper place.	
5. Prepare tags for all inflammable and non-inflammable toxic waste chemicals.	
6. Place containers of inflammable and non-inflammable toxic waste at a safe place carefully.	

7. Tag the inflammable and non-inflammable toxic waste containers according.	
8. Store the inflammable and non-inflammable toxic waste at its proper place accordingly.	
9. Dispose-off all waste as per SOPs of press room.	
10. Wash hands thoroughly	

Learning Unit - :

LU 3: Handle non-toxic chemicals

Overview: This learning unit defines about the different types of non-toxic chemicals, and procedure of their waste disposal.

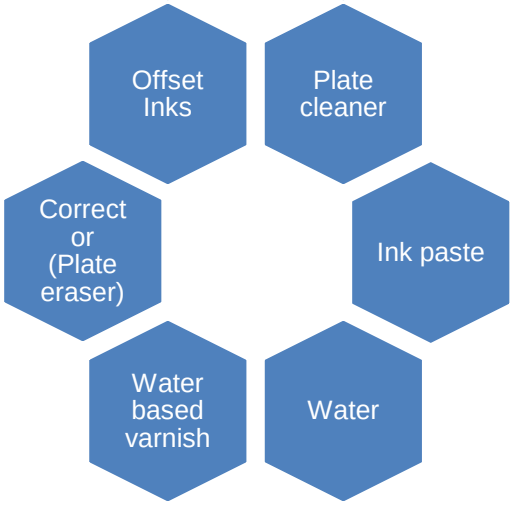
> ***Remember:***
>
> *"Hazardous" includes flammable liquids even if water soluble*

Non-toxic chemicals:

Nontoxic materials are not considered to be harmful to human health. The toxicity must be evaluated in terms of quantity of material. If the quantity of a substance that causes harm is less, its toxicity is determined to be higher.

Similarly, there is a minimum dose for nearly all substances below which toxic effects are not seen, called the toxicity endpoint. Toxic waste poisons the groundwater or makes nearby animals sick, but nontoxic waste tends to break down without any negative consequences.

Non-toxic materials used in Printing:



Procedure of non-toxic waste disposal:

Liquid non-hazardous (chemical) wastes with a pH between 6 and 10 may be flushed to the sanitary sewer (down the sink).

An aqueous (water-based) solution of any of the compounds in the list below is considered a liquid non-hazardous chemical waste and can be poured down the sanitary sewer.

Waste generators must perform a hazardous waste determination prior to disposal of all chemicals

Solids: Collect solids in disposable, non-leaking containers, labeled with contents, clearly marked as non-hazardous, and prepared for disposal

Liquids: Solutions containing only non-hazardous, water miscible liquid materials, pH between 6 and 9.5, can be disposed through the sewer system

An aqueous (water-based) solution of any of the compounds in the list below is considered a liquid non-hazardous chemical waste and can be poured down the sanitary sewer

Practical Activity 1/1:

Module: 2	**Perform Waste Management**	
	Learning Unit: 3	**Handle non-toxic chemicals**
	Practical Description:	Tagging of containers of non-toxic chemical and storage of non-toxic waste to designated place. Disposal of inflammable and non-inflammable non-toxic chemical waste
Time:	04 hours	
Equipment	Die cutting machine	
Tools	N/A	
PPE	Uniform, Safety shoes, safety mask, Gloves	
Materials	Liquid dispose of container, Container for inflammable non-toxic chemical, Container for non-inflammable non-toxic chemical, Waste bin.	
Key Point	Keep tagging and storing of non-toxic material carefully	
Learning Outcome:	• Tag containers of non-toxic chemical as per instruction. • Store nontoxic waste at designated place. • Dispose-off inflammable non- toxic chemical waste as per instruction.	
Precautions:	Ensure safety	

Instructions	**Illustrations**
1. Prepare tags for non-toxic waste chemicals.	

2. Put the nontoxic waste in the container carefully.	
3. Store the nontoxic waste container at its proper place thoroughly.	
4. Segregate inflammable and non-inflammable non-toxic chemicals waste	
5. Dispose of flammable non-toxic chemical.	

6. Dispose of non-inflammable non-toxic chemical as pre SOPs.	
7. Remove gloves, mask	
8. Recheck no waste is left to dispose-off.	
9. Wash hands gently.	

Learning Unit - :

LU 4: Manage solid waste

Overview: This learning unit defines types of solid waste and procedures to dispose it.

Reducing solid waste

To reduce solid waste, consider the following options:

Paper and board

• Keep your presses well-maintained to avoid spoilage.

• Set up the presses for optimum performance and train your staff to achieve minimum make-ready waste.

• Seek out the causes of spoilage and try to eliminate them.

• Make sure each job is fully signed-off by the pre-press area to avoid waste from proofing, copy or artwork mistakes.

• Consider improving efficiency by using better press maintenance.

• Find out if you can recycle paper or board in two grades. Non-inked or less inked paper can be worth more to recyclers, and if so, could bring you a better return.

Find out if it's easier and more economical to have your recycling contractor sort out the different grades of paper for you. Make blank pads from excess paper.

Non-paper substrate (plastics, metals, wood, flexible, glass, fabric, laminates)

If you don't print on paper but use another substrate, the recyclability of that material will be critical to reducing the costs of your operations.

Consider reusing or recycling screen printing frames where possible.

Plastics

Many plastics can be recycled, including shrink-wrap, but some contractors require the plastic types to be separated. Inks can be supplied in plastic cartridges that are reusable.

Metals

Metals are easily recycled. Separate them into different types to increase their value. Aluminum printing plates are commonly recycled as scrap metal.

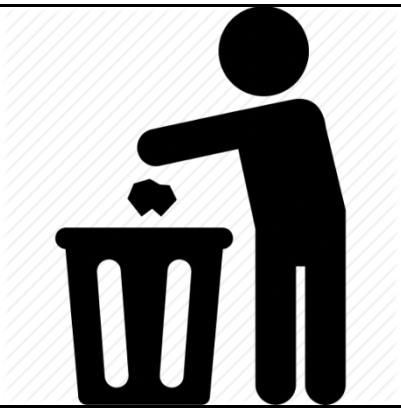
Wood

Wood is a common printing waste. Some of it is reusable, such as pallets in good condition. You can also reuse wood as packaging for your products. Ask your suppliers if they can take back non-standard pallets.

Containers

Purchase products from suppliers that provide a collection, reuse or refill service for containers. Purchase ink and other products in containers that are made from easily recyclable materials.

Glass and some plastic containers may be able to be recycled. Check with your waste service contractor or your local Council. Segregating recyclable materials as much as possible from other waste streams will increase their value and reduce your waste disposal costs.

<table>
<tr><td rowspan="3">Module: 2</td><td colspan="2">Perform Waste Management</td></tr>
<tr><td>Learning Unit: 4</td><td>Manage solid waste</td></tr>
<tr><td>Practical Description:</td><td>Sort and put solid waste in waste bin according to disposable categories, and store waste bins at designated place</td></tr>
<tr><td>Time:</td><td colspan="2">04 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">N/A</td></tr>
<tr><td>Tools</td><td colspan="2">N/A</td></tr>
<tr><td>PPE</td><td colspan="2">Uniform, Safety shoes, Gloves</td></tr>
<tr><td>Materials</td><td colspan="2">Waste bins</td></tr>
<tr><td>Key Point</td><td colspan="2">Carefully sorting of solid waste</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Tag containers of printed & un-printed substrate waste as per instruction.
• Sort substrate waste according to disposable categories
• Store printed substrate waste in designated waste container.
• Store un-printed substrate waste in designated waste container.</td></tr>
<tr><td>Precautions:</td><td colspan="2">Ensure safety first</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Sort out solid waste according to disposable categories.</td><td> 
</td></tr>
<tr><td colspan="2">2. Put solid waste in waste bin carefully.</td><td>  </td></tr>
</table>

3. Store solid waste bin to its designated place.	
4. Wash your hands gently.	

Summary of the module:

- Waste management is one of the biggest environmental issues faced by printing industry today.
- The printing industry uses a variety of valuable raw materials many of which can be recycled.
- There are three major waste streams found in the printing industry:
    a) **Solid waste** – in general printing environment solid waste could consist of empty containers, damaged plates
    b) **Water waste** – water waste from printing operations may contain lubricating oils, waste ink, and clean-up solvents
    c) **Air emissions** – printing operations produce volatile organic compound emissions from the use of cleaning solvents and inks,
- Best management practices create the most cost-effective way to decrease the amount of waste generated from operations. This includes a careful control of raw materials, practical scheduling, and job management
- The waste management provides a framework for managing waste: avoid; reduce; reuse; recycle; and dispose. Following are various methods to reduce waste in print presses.
- A toxic substance is a substance that can be poisonous or cause health effects. Products that we use daily, such as cleaners, alcohol, oil can also be toxic. Any chemical can be toxic or harmful under certain conditions.
- Nontoxic materials are not considered to be harmful or destructive to human health. It is to be noted that at some level, every substance is toxic.
- Substrate/paper waste is generally the largest waste stream and should be segregated to make sure it is being recycled to its fullest extent.
- Creation of waste - in the printing industry as well as at home - should be avoided as much as possible. If waste is nevertheless produced, it should be recycled, incinerated or treated appropriately.
- With careful choice of materials and good control of production processes, waste can be minimized to benefit both the printing company and the environment.

Frequently Asked Questions (FAQs)

Question	Answer
1. Why should I work safely with toxic material?	Toxic materials are substances that may cause serious harm to an individual if it enters the body.
2. Why should good ventilation system necessary for working with toxic chemicals?	Well-maintained ventilation systems remove toxic vapors, fumes or airborne dusts from the workplace
3. How should store containers of toxic material?	• Keep the amount of toxic material in storage as small as possible. • Inspect storage areas and containers regularly • Ensure that containers are tightly closed
4. How dispose of waste toxic material safely?	• Do not mix hazardous waste materials with regular garbage • Do not overfill liquid waste containers.
5. Why good housekeeping is important when working with toxic chemical?	Good housekeeping is a very important way to prevent exposure to toxic materials.
6. Describe about nontoxic materials?	Nontoxic materials are not considered to be harmful to human health. The toxicity must be evaluated in terms of quantity of material.
7. Describe about Liquids?	Solutions containing only non-hazardous, water miscible liquid materials, pH between 6 and 9.5, can be disposed through the sewer system
8. Explain about Solids?	Collect solids in disposable, non-leaking containers, labeled with contents, clearly marked as non-hazardous, and prepared for disposal
9. What do you know about air emission?	Air emissions – printing operations produce volatile organic compound emissions from the use of cleaning solvents and inks.
10. How can you briefly explain water waste?	Water waste – water waste from printing operations may contain lubricating oils, waste ink, and clean-up solvents

Self-Assessment

(MCQs)

Please mark the correct one from the given options. You can check your answer with the Answer Key at the end of this module

Q 1. Waste management are all the activities and actions required to manage waste from its inception to it's
a) packing
b) burning
c) final disposal
d) Storage

Q 2. All of the following are categories of waste, except:
a) industrial
b) Litter
c) Hazardous
d) Municipal

Q 3. Hazardous waste.
a) Is flammable
b) Is corrosive
c) Is toxic
d) all choices are correct

Q 4. The key component of waste management is:
a) Safety
b) keeping an eye on waste
c) waste reduction
d) All of these

Q 5. The sum of all the waste produced by individuals, industries, mining, and agriculture is referred to as:
a) the waste stream
b) trash
c) municipal solid waste
d) Recycling

Q 6. There are _____ major waste streams found in the printing industry:
a) Solid waste
b) Water waste
c) Air emissions
d) All of above

Q 7. Make sure each job is fully _____ by the pre-press area to avoid waste from proofing, copy or artwork mistakes.
a) Signed-in
b) Signed-off

c) Described
d) None of above

Q 8. Collect _____ in disposable, non-leaking containers, labeled with contents, clearly marked as non-hazardous, and prepared for disposal

a) Solids
b) Liquids
c) Solution
d) None of above

Q9. The toxicity must be evaluated in terms of material's_____.

a) Quality
b) Quantity
c) a & b both
d) None of above

Q10. _____ Ventilation systems remove toxic vapors, fumes or airborne dusts from the workplace.

a) Well-maintained
b) Sequenced
c) Horizontal
d) Vertical

Answer Key

MCQ No.	Correct Answer
1	c
2	b
3	d
4	d
5	a
6	d
7	b
8	a
9	b
10	a

POST PRESS OPERATIONS (Packaging)

Learner Guide

National Vocational Certificate Level 3

Version 1 - December 2019

Module-3

Module 3: - Perform Embossing

Learning Outcomes:

After completion of this module the learner will be able to:

LU1: Perform Substrate handling

LU2: Make ready workstation for Embossing

LU3: Perform Embossing operation

LU4: Perform post production activity

LU5: Maintain log Book

Learning Unit - :

LU 1: Perform Substrate handling

Overview: The purpose of this learning unit is to inform the learner about side lay and front lay and their importance.

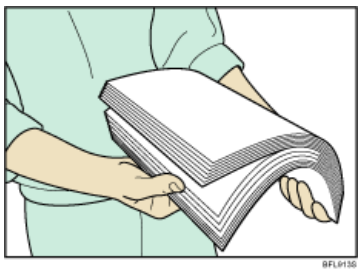
Side lay and front lay:

- The purpose of side lay is to keep a perfect registration of the substrate from the pin side.
- The purpose of front lay is to keep a perfect handling of the substrate from the front lay side

Perform substrate (paper) Stacking:

Overview: The purpose of this learning unit is to inform the learner about stacking by proper fanning of substrate.

Purpose of fanning: Purpose of fanning is to avoid paper static charging. It also separates the paper.



Module: 3	**Perform Embossing**	
	Learning Unit: 1	**Perform Substrate handling**
	Practical Description:	Perform fanning process and place substrate on feeder
Time:	08 hours	
Equipment	Die cutting machine feeder side	
Tools	Micrometer Weighing scale with cutter	
PPE	Uniform and safety shoes	
Materials	Handout on related topic	
Key Point	Proper handling of substrate	
Learning Outcome:	• Verify side-lay & front-lay of the printed substrate • Perform Substrate Stacking as per instruction. • Verify the thickness and GSM value of the substrate.	
Precautions:	Ensure that don't improper feeding.	

Instructions	**Illustrations**
1. PPE's must be followed.	

1. Perform fanning process.	
2. Proper placing of paper in the feeder**.**	

Learning Unit - :

LU 2: Make ready workstation for Embossing

Overview: The purpose of this learning unit is to make ready workstation for embossing.

Embossing is one of the printing techniques, which enrich the look of your box:

Embossing is an artistic way of enhancing your pattern in print. It can be applied to various surfaces - from paper to cardboard and even wood. It's a popular addition to finish in greeting cards and packaging designs.

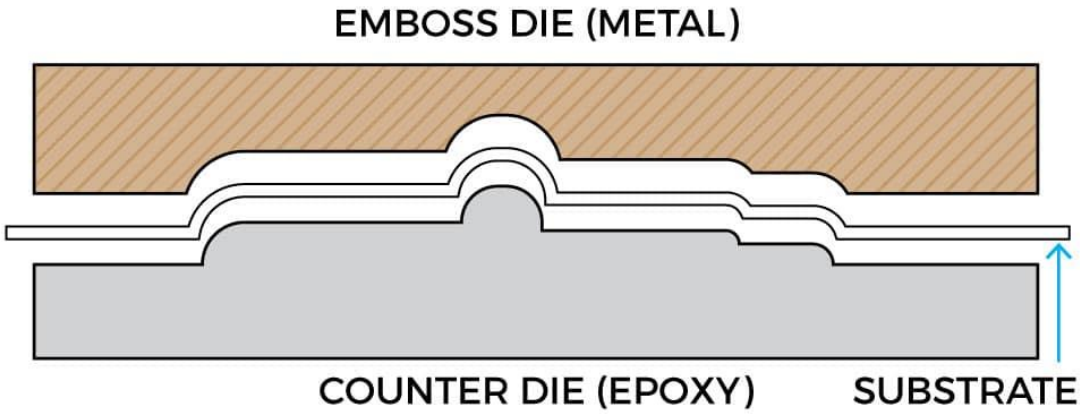
Embossing conducted

The pattern, that is embossed, can be raised or printed in relief - this is up to the design. As in many other printing techniques, the pattern is created by the pressure of a high temperature. A template is firstly prepared (made on a metal die), on which the desired surface is later embossed or de bossed in the process.

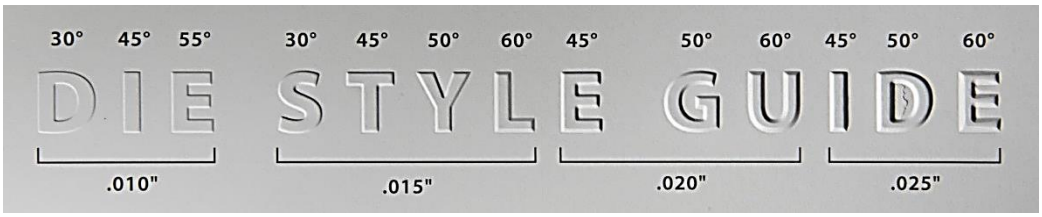
From the designing point of view, embossing adds originality to your packaging, as well as provides your customer with a unique experience with the box. It is often used along with hot stamping. In such cases, the embossed pattern is filled with foil in the process of hot stamping. The outcome is a 3d effect and glowing element on the surface. The beauty of embossing lies in the fact that it can add a very subtle novelty to your design.

How it's done

Embossing is done by pressing a sheet of paper (or other substrate) into a female die that has a design engraved or etched into it. This is usually done with a male counterpart underneath the paper, so that the paper is sandwiched between the two and the design is transferred to the paper.



Although embossing seems to be quite deep visually, it is commonly no more than 15 microns and at most, 25 microns. That's 25 thousands of an inch. Your average emboss is about 1/64th of an inch. You can see in this photo how the depth of an emboss die affects the appearance of the final piece. Note that as the depth of the die increases, there's a higher chance of the paper tearing (as can be seen in the "D" of "guide").



While embossing technically refers to a raised surface, embossing can also be done to create a depressed design in a surface. In the graphic design and printing industry, this is usually referred to as "deboss." For a deboss, the male and female dies are switched so that the topside (front) of the sheet is pressed with the male die and the female die sits underneath it. When a deboss is registered to printing, one can create the appearance of engraving.

For the most part, presses that do embossing are interchangeable with presses that do foiling. Both processes require a lot of pressure and, for certain effects, a heated plate. Moreover, foiling and embossing are most often done together and so it makes sense to have a machine that can handle both.

The most common presses are:

- **Clamshell press:** This press closes like a clam, sandwiching the paper between the male and female die. This type of machine typically has a small footprint with a lot of pressure. It is also easy to switch dies and change your set-up (make-ready), making it a good option for small runs. If you're around foiling and embossing long enough you're bound to hear Kluge. This is the most popular clamshell stamping press and is almost synonymous with clamshell hot stamping press.
- **Straight stamp press:** Bobst, Thermotype, Kensoll-Franklin and other brands are straight stamp presses. The die comes straight down with paper being fed in and out of the stamp area. Because of the straight path of the paper, these are faster than clamshell presses. But typically, the set up time is longer. For long runs, these are better than clamshells.

Roll press: A roll press is similar to an offset printer, except instead of using ink plates, it uses dies. This press uses a die mounted on a roller. Paper, either on a roller or in sheets, is fed through and impressions are rolled onto the design. This is the fastest of the three press types, but the dies are far more expensive and the set up time is far longer. So really, this method is used for things that have huge (in the hundreds of thousands or millions) run quantities.

Metals

As mentioned above, different types of dies are made with different metals. The three most common are magnesium, copper and brass. A designer should know the pros and cons of these:

Magnesium: Used for single-level dies. Magnesium is a soft metal and is etched using acid. The process is quite fast, with the etching itself taking only a few minutes. The advantage of magnesium is the cost. It is half the cost of copper and about a quarter the cost of brass. Whereas a small magnesium die might cost $50, the same die made of brass could be well over $300. The disadvantage with magnesium is that it is soft. While die manufacturers will rate a mag die for 10,000 impressions, it often will show wear before then. Moreover, a single jam in a stamping press may permanently ruin the die.

Copper: Like magnesium, copper is used for single-level dies. The advantage it has over magnesium is the fact that it is significantly harder, rated for 100k impressions. It won't be ruined by a jam in the stamping press. While more expensive than magnesium, it is still significantly cheaper than brass. The disadvantage with copper, like magnesium, is that because it is created using an etching process, it is only usable for a single level emboss.

Brass: Used for multi-level and sculpted dies. Brass is the hardest of the common die metals and will usually last longer than any print run. Brass dies are CNC'ed and are required for multi-level and sculpted dies as well as combination foil-emboss dies. They are two to three times more expensive than copper dies.

Single-level magnesium emboss die with an epoxy counter die

Single-level copper emboss die with an epoxy counter die


Sculpted brass emboss die

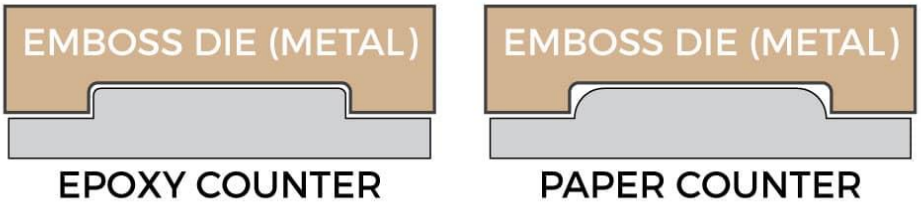
For most common emboss applications, copper dies are the best choice. Not significantly more expensive than magnesium dies, they will last longer and won't be ruined by a paper jam. Magnesium dies are good for prototypes due to their low cost and fast turnaround, but with the right die manufacturer, you will see little difference in the turnaround of a mag die compared to a copper die. Brass dies are a necessity for combo, multi-level or sculpted dies and you should generally allow for a few weeks to get the dies made.

Counter Dies & Make-Readies

A counter die (also referred to as "counterforce") is the male counterpart to the female emboss die. Most die manufacturers will provide you with a counter die when they send you an emboss die. This counter die is made with an epoxy that hardens into what appears to be a translucent hard plastic. These are made by putting epoxy on a thin, fiberglass board and then stamping the emboss die onto it. If you're dealing with a high quality die manufacturer, they will also machine out any excess material around the design, leaving less chance for contact where it isn't wanted.

Counter dies can also be made using a paper chipboard-like material called embossing board. In the industry, this is commonly referred to as "yellow board" due to it's color. You put this in the press, make it slightly damp and then repeatedly stamp it with your emboss die with the heat turned up. The combination of the pressure and the heat drying the dampness in the board gives you a solid counter die that will work for short runs.

The edges of your emboss, especially when using a single-level, photo-etched die, are largely influenced by your counter die. The softer your counter die, the more rounded your edges will be. Conversely, the more solid your counter die (such as the epoxy plastic), the sharper your embossed edges will appear.

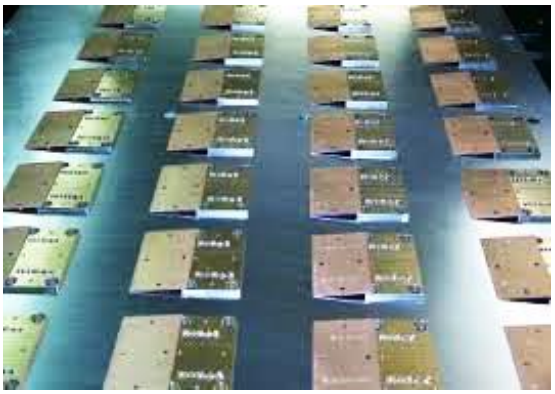


A "make-ready" is the composite of all materials that go underneath the emboss die.

Practical Activity 1/1:

<table>
<tr><td rowspan="3">Module: 3</td><td colspan="2">Perform Embossing</td></tr>
<tr><td>Learning Unit: 2</td><td>Make ready workstation for Embossing</td></tr>
<tr><td>Practical Description:</td><td>Male female side of the die place on its specific place for embossing</td></tr>
<tr><td>Time:</td><td colspan="2">26 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">Die cutting machine</td></tr>
<tr><td>Tools</td><td colspan="2">Allen key set, Spanner set, Scissor, Embossing block and counter block, Die cutting machine</td></tr>
<tr><td>PPE</td><td colspan="2">Uniform and safety shoes</td></tr>
<tr><td>Materials</td><td colspan="2">Handout on related topic</td></tr>
<tr><td>Key Point</td><td colspan="2">Fixing of male female die on it proper place</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Set the Embossing block on to the die
• Adjust the feeder according to the job
• Perform Substrate stacking in to the feeder
• Adjust the front-lay & the side-lay
• Mount the die on to the machine
• Fix the counter block on the impression plate.
• Adjust the registration as per job.
• Adjust block impression as per instruction
• Perform test run</td></tr>
<tr><td>Precautions:</td><td colspan="2">Be careful with the cutting blades during fixing of male female die</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Place the die wood on a table and mount the block on the die.</td><td>  </td></tr>
</table>

2. Fixing of male female die on its proper place.	
3. Adjust the feeder, stack the substrate in the feeder.	
4. Adjust the front-lay & the side-lay	
5. Mount the die on to the machine	
6. Fix the counter block on the impression plate	

7. Adjust registration and Impression	
8. Perform test run.	

Learning Unit - :

LU 3: Perform Embossing operation

Overview: The purpose of this learning unit is to inform the learner about importance of the embossing operation.

Embossing operation:

Embossing is done by pressing a sheet of paper (or other substrate) into a female die that has a design engraved or etched into it. When a deboss is registered to printing, one can create the appearance of engraving. For the most part, presses that do embossing are interchangeable with presses that do foiling.

Embossing and de-bossing are the processes of creating either raised or recessed relief images or designs in paper and other materials. An embossed pattern is raised against the background, while a debossed pattern is sunken into the surface of the material (but might protrude somewhat on the reverse, back side).

Procedure of mounting Block on die:

- Place the die wood on the table.
- Place the block wood,
- Mount the key line and screw the block as per key line.
- Insure the total thickness of block including wood does not exceed the total height of 23.3 mm.
- Mount the die on the chase with the help of fitting and fixture.
- Mount a clean counter plate on the machine.
- Put the glue or double side tape on the counter block.
- Mount the counter block on the metal block with the help of grease.
- Take the impression.
- Cross check the registration and impression.

Procedure embossing operation:

- Stack the martial on feeder.
- Set the fount lay and side lay of the machine.
- Set the delivery and pile of the machine
- Preform a test run and if everything is ok then stat production.
- Perform quality check during production.

Practical Activity 1/1:

<table>
<tr><td rowspan="3">Module: 3</td><td colspan="2">Perform Embossing</td></tr>
<tr><td>Learning Unit: 3</td><td>Perform Embossing operation</td></tr>
<tr><td>Practical Description:</td><td>During test run observe the accuracy of embossing process and in case of any abnormality adjust as required</td></tr>
<tr><td>Time:</td><td colspan="2">64 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">Die cutting machine</td></tr>
<tr><td>Tools</td><td colspan="2">Allen key set, Spanner set, Scissor, Embossing block and counter block, Die cutting machine</td></tr>
<tr><td>PPE</td><td colspan="2">Uniform and safety shoes</td></tr>
<tr><td>Materials</td><td colspan="2">Handout on related topic</td></tr>
<tr><td>Key Point</td><td colspan="2">Embossing must be at its proper place on the printed sheet</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Get approval from the supervisor
• Carry out Embossing operation as per instruction
• Check & maintain the quality of Embossing</td></tr>
<tr><td>Precautions:</td><td colspan="2">Ensure all safeties as required on die cutting machine.</td></tr>
</table>

Instructions	**Illustrations**
1. Get following approval from the supervisor before starting the job: a) Registration b) Embossing high	
2. Take out two set of sheets from each pile one in the center and one from the top: Check the following points: a) Registration b) Embossing high	

Learning Unit - :

LU 4: Perform post production activity

Overview: The purpose of this learning unit is to inform the learner about importance of the cleaning after work.

Describe the importance of maintaining/cleaning of work station

Cleaning and tidiness can help control or eliminate workplace hazards. Poor housekeeping practices frequently contribute to incidents.

Effective cleaning is an ongoing operation: it is not a one-time or hit-and-miss cleanup done occasionally. Periodic "panic" cleanups are costly and ineffective in reducing incidents.

The workplace environment influences employees' productivity, performance and well-being. No matter the industry, maintaining a clean workplace may help keep staff members safe, healthy and efficient. However, busy production schedules and increasing workloads may cause standards to dip.

While it may be tempting to put off dusting or other types of cleaning around the office or worksite, doing so may put employees at risk of suffering an injury or illness and may even impact performance levels. Maintaining a clean workplace is vital for employers to reduce their workers compensation claims and keep efficiency high.

Essential to safety

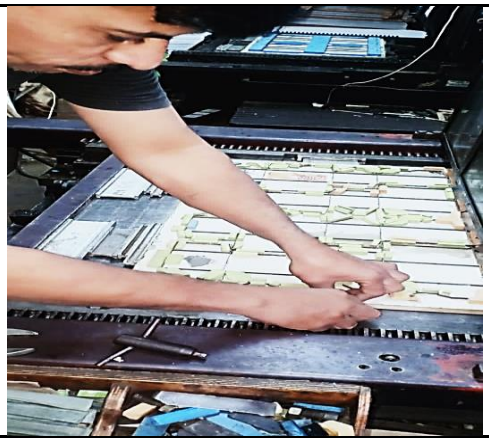
When employees work in a messy environment, they may not notice all hazards, which increases the risk of an accident. According to the Occupational Safety and Health Administration (OSHA), an occupational hazard is anything in the workplace that may cause harm. An occupational hazard is commonly caused by neglect on the part of the employer or a lack of awareness by workers. When the office or worksite isn't clean, it may increase the chance that a hazard will go unnoticed by a supervisor and staff members.
For example, if equipment is placed along an emergency route, workers may become injured if they trip or fall over it because it is out of place. If boxes aren't stacked properly, they may fall on a worker and cause an injury. Employers may want to remember to keep the workplace free of debris and remind workers to put all equipment, such as personal protective equipment (PPE), in designated places to prevent an accident.

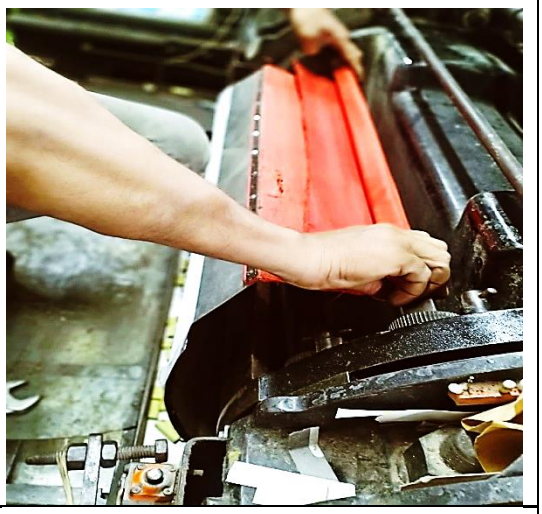
Crucial to health

Flu season is rapidly approaching and workplaces may see an increase in the number of employees using sick days if they become ill. According to Kimberly-Clark Professional, germs can spread quickly through the workplace if supervisors and employees don't adequately sanitize their hands and their workspaces. Commonly used spaces, such as break rooms, can be hot spots for germs to accumulate.
According to Kimberly-Clark, break rooms have been found to have approximately 20,951 germs per square inch. Parts of the break room that tend to be touched the most, such as doorknobs, microwave oven handles and sinks, can be ripe with germs. Employers may want to clean these places on a frequent basis, and daily during flu season.

Another common health hazard of unclean workplaces is the germination of mold. According to OSHA, mold can cause adverse health effects for employees who are exposed to mold spores. Mold is a fungi that can release millions of spores into the air and can cause respiratory illnesses. Because of this, OSHA has strict standards employers are asked to follow to prevent the growth of mold in the workplace. According to OSHA, mold germination occurs in warm and humid conditions, making it essential that employers regularly clean worksite facilities, such as bathrooms, to reduce the chance of mold growth. Employers also may want to replace or clean indoor air filtration systems frequently to ensure any mold spores that are released into the air don't reach workers.
As a result, a messy or unhygienic workplace may influence worker productivity. If employees receive an injury or illness at work, they may not be able to perform their tasks as well as when they were healthy. This decrease in efficiency may cause deadlines to be missed and additional errors to occur.

Practical Activity 1/1:

<table>
<tr><td rowspan="3">Module: 3</td><td colspan="2">Perform Embossing</td></tr>
<tr><td>Learning Unit: 4</td><td>Perform post production</td></tr>
<tr><td>Practical Description:</td><td>Removing the die and cutting plate from the machine, perform cleaning activity on both then placed the die with plate on its proper place</td></tr>
<tr><td>Time:</td><td colspan="2">08 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">Die cutting machine</td></tr>
<tr><td>Tools</td><td colspan="2">Allen key set, Spanner set, Scissor, Embossing block and counter block, Die cutting machine</td></tr>
<tr><td>PPE</td><td colspan="2">Uniform, safety shoes and gloves</td></tr>
<tr><td>Materials</td><td colspan="2">Cleaning brush, cloth & scraper</td></tr>
<tr><td>Key Point</td><td colspan="2">Proper dismantle of die board and cutting plate</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Remove the die and Impression plate from the machine as per instruction
• Clean the cutting plate as per instruction
• Remove the pile form feeder and delivery.
• Clean the machine & workplace</td></tr>
<tr><td>Precautions:</td><td colspan="2">Ensure safety during dismantling of the die and cutting blade</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Make the machine come to its position. First turn off the machine and take out the die section.</td><td>  </td></tr>
</table>

2. Remove the die from its section and also cutting plate.	
3. Perform cleaning plate and machine.	

Learning Unit - :

LU 5: Maintain log Book

Overview: The purpose of this learning unit is to inform the learner about importance of record keeping.

Importance of record keeping:

A key part of any preventive maintenance program is proper documentation of the work completed, ideally recorded directly into an electronic format, but also on paper. This can reduce the number of expensive repairs, increase operator accountability, make warranty claims easier, increase operator safety, identify trends, enhance visibility of individual asset health, and have significant positive impact on resale value. Proper record keeping also helps in many managerial operation such as analyzing production activity, workforce deliverables and employee evaluation based on KPIs.

Practical Activity 1/1:

Module: 3	**Perform Embossing**	
	Learning Unit: 5	**Maintain log Book**
	Practical Description:	To record the time data during process.
Time:	06 hours	
Equipment	Die cutting machine	
Tools	Notes and file	
PPE	Uniform, safety shoes, gloves	
Materials	Handout on related topic and Log book.	
Key Point	Proper maintaining and filling of the log book.	
Learning Outcome:	• Record the final counter along-with the wastages • Record downtime during die cutting operation	
Precautions:	Ensure recorded data must be neat written.	

Instructions	**Illustrations**
1. Fill and record the log book. Ensure following records are filled: a) Total counter b) Wastage c) Down Time Any other remarks	

Summary of the Module

Embossing is one of the printing techniques, which enrich the look of your box. Embossing is an artistic way of enhancing your pattern in print. It can be applied to various surfaces - from paper to cardboard. It's a popular addition to finish in greeting cards and packaging designs.

Embossing is when you raise a logo or other image to create a 3D graphic. This raised design is achieved by pushing a metal die into paper, card stock (or other chosen material) from underneath. The raised area can then have ink or foil applied to it for added effect or it can be left unprinted or un foiled.

Frequently Asked Questions (FAQs)

Question	Answer
1. Describe the importance of maintaining/cleaning of work station	Cleaning and tidiness can help control or eliminate workplace hazards. Poor housekeeping practices frequently contribute to incidents.
2. OSHA stands for?	It stands for Occupational Safety and Health Administration
3. PPE stands for?	It stands for Personal Protective Equipment
4. How to maintain log book? Write down steps.	2. Fill and record the log book. Ensure following records are filled: a) Total counter b) Wastage c) Down Time
5. Write down importance of record keeping?	A manufacturing production log, is an excellent way of recording the 'stage by stage process of manufacturing a product. In its simplest form, it is a series of photographs accompanied by notes.
6. How to clean the cutting plate after post production?	Clean the cutting plate with the help of chemical and scraper.
7. What is effective cleaning? Explain briefly.	Effective cleaning is an ongoing operation: it is not a one-time or hit-and-miss cleanup done occasionally. Periodic "panic" cleanups are costly and ineffective in reducing incidents.
8. What does workplace environment influences?	The workplace environment influences employees' productivity, performance and well-being.
9. What happens when the employee work in a messy environment?	When employees work in a messy environment, they may not notice all hazards, which increases the risk of an accident.
10. What happens when the boxes aren't staked properly?	If boxes aren't stacked properly, they may fall on a worker and cause an injury. Employers may want to remember to keep the workplace free of debris and remind workers to put all equipment.

Self-Assessment

(MCQs)

Please mark the correct one from the given options. You can check your answer with the Answer Key at the end of this module

1. A _____ is commonly caused by neglect on the part of the employer or a lack of awareness by workers.
    a) Occupational Hazard
    b) Occupational Plant
    c) Occupational Safety
    d) None of above

2. If boxes aren't stacked properly, they may fall on a worker and cause _____.
    a) Incident
    b) an injury
    c) accident
    d) All of above

3. _____ can help control or eliminate workplace hazards.
    a) Framing and embossing
    b) House-keeping
    c) Cleaning and tidiness
    d) None of above

4. When employees work in a _____ environment, they may not notice all hazards.
    a) Messy
    b) Neat & Clean
    c) Complex
    d) Compound

5. Checking of cutting and creasing of the substrate and ensure its _____.
    a) Perfection
    b) Implementation
    c) Imperfection
    d) None of them

6. Ensure that every up of the sheet must be punched (Tuck) to come out with the sheet during _____.
    a) Printing process
    b) Delivery process
    c) Feeding process
    d) None of all

7. Perform test run for checking _____ at its accurate place.
    a) Embossing
    b) Printing
    c) Registration
    d) None of above

8. First fix the _____ on its proper place in the machine.
    a) Flip board
    b) Creasing matrix
    c) Die board
    d) All of them

9. Use a _____ and cut a sample. Place it on a weighing scale and note down the reading.
    a) GSM cutter
    b) FSM cutter
    c) CPS cutter
    d) None of them

10. Purpose of fanning is to avoid paper static charging. It also _____ the paper.
    a) Matches
    b) Separates
    c) Combines
    d) All of them

Answer Key

MCQ No.	Correct Answer
1	a
2	b
3	c
4	a
5	a
6	b
7	a
8	c
9	a
10	b

POST PRESS OPERATIONS (Packaging)

Learner Guide

National Vocational Certificate Level 3

Version 1 - December 2019

Module-4

Module 4: - Develop professionalism

Learning Outcomes:

After completion of this module the learner will be able to:

LU1: Participate in in-house training

LU2: Participate in outdoor training

LU3: Attend trade shows workshop, seminars

LU4: Utilize internet

LU5: Prioritize job schedule

Learning Unit - :

LU 1: Participate in in-house training

Overview: This learning unit describes the importance of being a good team player, identification of TLM /curriculum. Finally the importance and Benefits of latest machining techniques and developments.

Importance of being a good team player:
Pressroom is run by a team; if one fails performance decline has a cascading effect. A team player does not only do his/her task well but also helps his/her fellow team members to do well. In a pressroom your inputs are someone else's output and your output is someone else's input, if one deliverable in this chain is flawed the final result is flawed thus rendering all the hard work useless.

Effective teamwork in the workplace helps drive the organization towards success.

Here are some qualities that can make a team player outstanding in the workplace:

1. **Show Genuine Commitment**
   Team players are genuinely committed to their cause. Good team players might make sure they are in the work place when needed, but great team players will make ”work” time worth it and contribute as much as possible. They always strive for excellence.

> **Remember:**
>
> *In a pressroom your inputs are someone else's output and your output is someone else's input.*

2. **Be flexible**

   Instead of sitting on the bench watching the rest of the crew perform, an outstanding team player wants to see the magic happen through his/her efforts as well. They are flexible to the situations thrown their way, and they participate and tackle challenges without showing too many signs of stress or pressure.

3. **Don't stay in the shadows**
   It is not in your interest to just sit quietly and get your work done. It's a good thing to involve others, as long as you are not bothering people with questions you already know the answer too. Great team players come to their teammates having prepared their ideas clearly.

4. **Be reliable and responsible**
   An excellent team player will be reliable and responsible. They complete the tasks in order of priority, not necessarily in order that they're given. When you're not sure of what should take priority, ask your supervisor.

5. **Actively listen**

   You are only a team player if you respectfully consider the viewpoints and ideas of other people as well. This is why diverse teams have the potential to be so effective, and it all depends on active listening.

6. Keep your team informed

Share your opinion, ideas and expertise without trying to come up with a plan for taking credit for it.

Transparency is a key on a team, so keep your team members informed. Planning for your own success is important, but your career progression may have a lot to do with how you communicate with other team members.

7. Always be ready to help

Even if it is not in your job description, be generous with advice to help team members. For example, if a member is having trouble with a technology tool that is easy for you, offer to sit down with him and show him what you know.

8. Support and respect others

It is important to become more self-aware of how you treat others. Remember, you'll receive respect when you give it to others. An ideal team player knows how to have fun, but he would never do it at someone else's expense.

9. Be a problem-solver

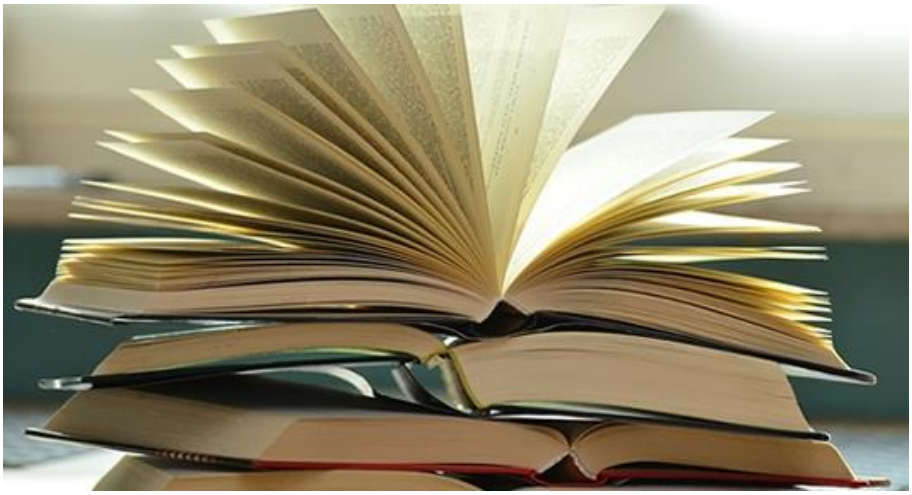
Your team leader may be working on solving problems, but there is no reason why you cannot offer solutions yourself. Your teammates will appreciate your skills and this may pay off later when your supervisor is assessing your progress.

10. Recognize when you are wrong

A good team player will back off an idea when it becomes clear it's not the right path. If you believe strongly that your team is making a mistake, you can find a way to come back to the issue when the time is right, but being a stubborn stick in the mud is not quality of a good team player.

Teaching Learning Material (TLM):

Teaching learning materials (TLM) are, tools, which are used by teachers to help learners to learn concept with ease and efficiency. It also helps the learners to achieve the learning outcomes after classroom teaching and learning.



Examples

Do you know?

Teaching material can support student's learning and increase their success.

Teaching materials can refer to a number of teacher resources; however, the term usually refers to concrete examples, such as worksheets or manipulative (learning tools or activities that students can handle to help them gain and practice facility with new knowledge). Teaching materials are different from teaching "resources", the latter including more theoretical and intangible elements.

Students Learning Support

Learning materials are important because they can significantly increase student achievement by supporting student learning.

Curriculum:

A ***curriculum*** is the combination of instructional practices, learning experiences, and students' performance assessment that are designed to bring out and evaluate the target learning outcomes of a particular course.

Typically refers to the knowledge and skills trainees are expected to learn, which includes the leaning standards or learning objectives they are expected to meet; the units and lessons that teacher teach. The assignments and projects given to learners; the books, materials, videos, presentations and readings used in a course and the tests, assessments and other methods used to evaluate learners.

Benefits of latest machining techniques and developments:

Industry today is moving at a breakneck pace. Keeping up to speed or ahead of the curve is vital for your business in order to meet the demands of today's customers.

Technology has been the standard in the printing world since 1903. It is a traditional solution perfect for customers looking for high volume printings, cost effective methods, flexibility and the most important thing: top quality results.

A really impressive degree of details and clarity is one of the most major benefits of printing.

Getting the latest knowledge of the technology and evolving with the market trends are the key factors to progress.

1.) Low Error

2.) Less Material Waste

3.) Consistent Product Quality

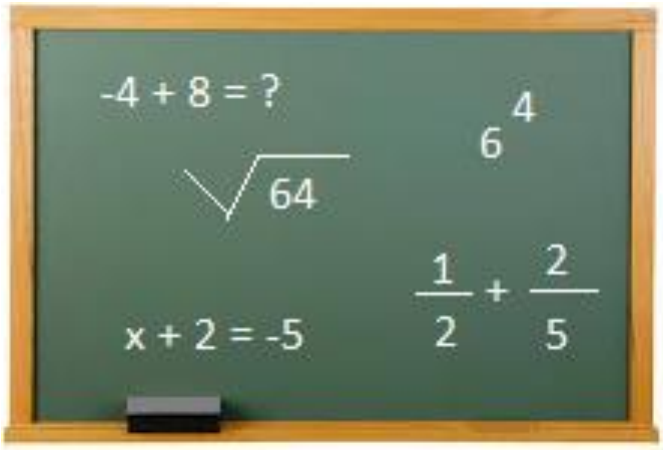
4.) Improved Workflow

5.) Reduced Turnaround Time

6.) Faster Production Cycles

Press room mathematical skills during training:

Understanding of basic arithmetic skills like addition, subtraction, multiplication and division is necessary to perform better role of press room operator.



Practical Activity 1/1:

<table>
<tr><td rowspan="3">Module: 4</td><td colspan="2">Develop professionalism</td></tr>
<tr><td>Learning Unit: 1</td><td>Participate in in-house training</td></tr>
<tr><td>Practical Description:</td><td>Clean workstation</td></tr>
<tr><td>Time:</td><td colspan="2">03 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">N/A</td></tr>
<tr><td>Tools</td><td colspan="2">Cleaning cloth, Dustpan</td></tr>
<tr><td>PPE</td><td colspan="2">Proper dress code, safety gloves, safety shoes</td></tr>
<tr><td>Materials</td><td colspan="2">Cleaning agent, caution signs</td></tr>
<tr><td>Key Point</td><td colspan="2">Oil and water on the floor should be properly cleaned so that no residue is left</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Identify latest training needs according to recent printing industry demands.
• Get enrolled in advance press training course.
• Follow training institute’s policies for professional development.
• Perform training task mentioned in TLM.</td></tr>
<tr><td>Precautions:</td><td colspan="2">When using hazardous chemicals, read manufacturer’s instructions for safety</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Check for dust, `debris, water and oil spill around the work floor</td><td>  </td></tr>
</table>

2. Pick up a clean cloth and wipe the floor	
3. Collect the dust and debris in a dustpan	
4. Ensure cleanliness of oil spots on the floor/working table	
5. Perform drying of wet floor with the help of cloth.	
6. Mark the freshly cleaned area with a caution sign	

Learning Unit - :

LU 2: Participate in outdoor training

Overview: This learning unit describes the importance of Industrial Kaizen and housekeeping through check sheet. It also emphasizes to applying basic mathematical and Basic English skills in the pressroom this learning unit focuses on keeping in touch with press training providers. It states importance and methods of time management and also helps the learner to identify press room Key Performance Indicators (KPIs)

Importance of Industrial Kaizen:

Remember:

Job training empowers people to realize their dreams and improve their lives

Kaizen is a manufacturing tool which improves quality, productivity, safety, and workplace culture. This occurs by applying small daily changes that yield major improvements over time. Kaizen comes from two Japanese words: Kai (change) and Zen (good). Over time, it became known as “continuous improvement.” Unlike many business practices Kaizen’s strength comes from requiring all workers—from the CEO to the shop floor assistant—to contribute suggestions to improve the business.

Kaizen provides one simple principle: look at how things can be improved, improve them, and then improve them again and again. You can do this by using Plan-Do-Check-Act (PDCA), empowering workers to find problems, develop solutions and apply solutions in a continuous cycle.

Using Kaizen will result in many benefits. Some of the expected benefits will be:

- Increased productivity
- Improved quality
- Better safety
- Lower costs
- Improved customer satisfaction

Housekeeping:

To work efficiently, checklist is important so that steps are carried out in the intended sequence. Pressroom housekeeping means to keep the offset printing workstation clean and organized. The following steps may be taken:

- Labeling of tools and equipment so that they do not get mixed with other machine operators
- Organizing tools in order for an easy Access.
- Ensure routine Cleaning of the work table and machine.
- Dispose-off waste in the designated area.

BEFORE

AFTER

Importance and methods of time management:

Time Management refers to managing time efficiently so that the right time is allocated to the right activity. Effective time management allows individuals to assign specific time slots to perform activities as per their importance. Time Management refers to making the best use of time as time is always limited.

Ask yourself which activity is more important and how much time should be allocated to the same in consultation with supervisor? Know how to prioritize the jobs. Time Management includes:

i. Effective Planning
ii. Setting goals and objectives
iii. Setting deadlines
iv. Prioritizing activities as per their importance
v. Spending the right time on the right activity

For Effective Time Management one needs to be:

i. **Organized –** Reduce pending tasks. Put important documents, tools and consumables in their respective place with proper labeling so that your equipment do not get mixed with other colleague's equipment. It saves time which goes on unnecessary searching

ii. **Don't misuse time -** Do not kill time by loitering or gossiping around. Concentrate on your work and finish assignments on time. Remember what you are being paid for, it is our social as well as religious obligation to 'Halal' your earnings. Don't wait till the last moment to submit your work.

iii. **Be Focused -** One needs to be focused for effective time management.

Develop the habit of using planning documentation for better time management. Set reminders for periodical maintenance and tools check.

Keep in touch with press training providers:

To keep on progressing, you need to upgrade your knowledge and skill which can be acquired through trainings. You should keep in touch with your supervisor and inform him about your eagerness to learn, so he/she may remember your name for next training session organized by the industry.

Skills above and beyond the basics of printing, can give you a professional advantage.

Remember:

Purpose of training is to tighten up the slack, toughen the body and polish the spirit.

Here are the five ways to keep your knowledge, skills and abilities up-to-date.

1. Take Professional Development Courses

Professional development courses can help you expand your professional skill set e.g. Supply chain workshop, Total Quality Management workshop etc.

2. Utilize Online Resources

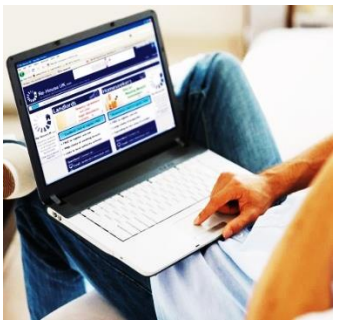
The Internet is a limitless source of information and training resources (Like You Tube and Lynda.com etc.). Online training courses are particularly convenient because they are affordable and flexible some OEMs published tutorial videos online which particularly useful.

3. Attend Professional Events

Professional events are valuable ways to learn about growth and development in printing industry. Local companies, business associations, and professional groups often host seminars, exhibition, forums, or workshops that can give you direct access and insight to experts in your profession. Print Pak is the largest printing exhibition organized by Pakistan Association of Printing and Graphic Arts Industry which also includes free training workshop and seminars by local and international resource persons.

Practical Activity 1/1:

<table>
<tr><td rowspan="3">Module: 4</td><td colspan="2">Develop professionalism</td></tr>
<tr><td>Learning Unit: 2</td><td>Participate in outdoor training</td></tr>
<tr><td>Practical Description:</td><td>Collect information about the new printing training courses</td></tr>
<tr><td>Time:</td><td colspan="2">03 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">Computer with internet</td></tr>
<tr><td>Tools</td><td colspan="2">Training brochures</td></tr>
<tr><td>PPE</td><td colspan="2">N/A</td></tr>
<tr><td>Materials</td><td colspan="2">Tools/equipment list, Training provider’s brochures, TLM</td></tr>
<tr><td>Key Point</td><td colspan="2">Stay focused when browsing for new training opportunities</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Promote Kaizen in printing industry.
• Implement 5S’s at work place.
• Maintain schedule chart according to organizational policies.
• Provide logistic support for press room machinery during maintenance.</td></tr>
<tr><td>Precautions:</td><td colspan="2">Identify a field of work to get your advanced training in.</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Make a list of your current activities in the pressroom and identify your weak points which needs to be improved</td><td>  </td></tr>
</table>

2. Take input from your classmates and trainer and ask them what should be your next training	
3. Ask your trainer which institutes offer training in the mentioned functions collect brochures if available	
4. Browse the internet for specific printing training institutes	
5. Note down the contact information for the course being offered	
6. Call the institute and ask for the timing and duration of the course	

7. Inform your trainer/supervisor about the available course and timings and ask them if you can join advance course without disrupting current activities or you will need an exemption from current training/work	
8. Join the advance training course	

Learning Unit - :

LU 3: Attend trade shows workshop, seminars

Overview: After completion of this learning unit the learner will be able to understand the benefits of latest printing technologies by getting involved in seminars/workshop and by reading related books/magazines.

Trade show:

An industrial event where different or same trade organization show case their latest products, services and techniques. It is a platform to meet industry partners and customers and to understand recent market trends and explore new technologies.

It is necessary for an offset printing machine operator that he/she prepare himself / herself for the requirements of new techniques in printing industry. It is very important to attend seminars with devotion and concentration to get a wide variety of informative topics related to printing industry.

Industrial visit:

It is also a part of professional courses, during which students pay visit to the relevant industry to get exposure to the real working environment.

Other best way to get knowledge and information is through watching videos/documentaries, and browsing on internet related to your interest areas.

Need of skill sets by getting involved in seminars:

Professional personnel attend following events to enhance their knowledge and skills:

- Seminar
- Workshops
- Meetings
- Discussions
- Competitions
- Exhibitions

Attending such kind of above programs can improve the following skill sets:

- Improving communication skills
- Gaining expert knowledge
- Networking with others and renewing motivation
- Enhance confidence level

Read books/magazines related with mechanical manufacturing trade:

Reading the related books and magazines to get the knowledge a person can get much information out of it according to the area of interest. Books or industrial magazines are the best way to be updated of the market trends.

Short keys for MS office:

There are many general program shortcuts in Microsoft office that make it easier for you to do everything from save your document to undo a mistake.

60 Most useful Microsoft Office shortcut keys it's useful for all works.

Keys	Action
Ctrl + BackSpace	Deletes Word To Left of Cursor
Ctrl + Del	Deletes Word To Right Of Cursor
Ctrl + Shift + F	Change the Font
Ctrl + Shift + L	Quickly Create A Bullet Point
Ctrl + Right	Go To The Word To The Right
Ctrl + Left	Go To The Word To The Left
Ctrl + DOWN	Arrow To Paragraph Down
Ctrl + Up	Arrow To Paragraph Up
Ctrl + End	Go TO The End Of The Document
Ctrl + Home	GO To The Start of The Document
Ctrl + Shift + Spacebar	Create A Non – Breaking Space.

Ctrl + Spacebar	Remove Character Formatting
Ctrl + Shift + >	Increase Font Size One Point
Ctrl + Shift + <	Decrease Font Size One Point
Ctrl + B	Toggle the Bold Attribute
Ctrl + C	Copy Selected Text To The Clipboard
Ctrl + E	Aligns The Line Or Selected Text To The Center Of The Screen
Ctrl + D	Open the Font Preferences Window
Ctrl + I	Italic Highlighted the Selection
Ctrl + J	Aligns The Line Or Selected Text To The Justify Of The Screen
Ctrl + K	Insert a Hyperlink
Ctrl + L	Aligns The Line Or Selected Text To The Lift Of The Screen
Ctrl + M	Indent the Paragraph
Ctrl+Q	Remove paragraph Formatting
Ctrl + R	Aligns The Line Or Selected Text To The Right Of The Screen
Ctrl + S	Save The Open Document
Ctrl + T	Create A Hanging Indent
Ctrl + U	Toggle the Underline Attribute
Ctrl + V	paste Text From Clipboard
Ctrl + W	Close The Currently Open Document
Ctrl + X	Cut Selected Text TO The Clipboard
Ctrl + Y	Redo The Last Action
Ctrl + Z	undo The Last Action
F1	Access Online Help Or The Office Assistant
F2	Move Text Or Graphics
F3	Insert An Autotext Entry
F4	Repeat The Last Action
F5	Choose The Go To Command
F6	Go To Next Pane Or Frame
F7	Launch The Spelling And Grammar Check
F8	Extend A Selection
F9	Update Selected Fields

F10	Activate The Menu Bar
F11	Go to the Next Field
F12	Choose The Save As Command
Shift + F1	Start Context – Sensitive Help Or Reveal Formatting
Shift + F2	Copy Selected Text
Shift + F3	Change The Case Of Letters
Shift + F4	Repeat A Find Or Go To Action
Shift + F5	Move To A Previous Revision
Shift + F6	Go To The Previous Pane Or Frame
Shift + F7	Choose The Thesaurus Command
Shift + F8	Shrink a Selection
Shift + F9	Switch Between A Field Code And Its Result
Shift + F10	Display A Shortcut Menu
Shift + F11	Go To The Previous Field
Shift + F12	Choose The Save Command

Production plan and its advantages:

In order to develop production plans, the production planner or production planning department needs to work closely together with the marketing department and sales department. They can provide sales forecasts, or a listing of customer orders. The "work is usually selected from a variety of product types which may require different resources and serve different customers. Therefore, the selection must optimize customer-independent performance measures such as cycle time and customer-dependent performance measures such as on-time delivery.

- Reduced labor costs by eliminating wasted time and improving process flow.
- Reduced inventory costs by decreasing the need for safety stocks and excessive work-in-process inventories.
- Optimized equipment usage and increased capacity.

Practical Activity 1/1:

<table>
<tr><td rowspan="3">Module: 4</td><td colspan="2">Develop professionalism</td></tr>
<tr><td>Learning Unit: 3</td><td>Attend trade shows workshop, seminars</td></tr>
<tr><td>Practical Description:</td><td>Attending the shows related to the printing industries, seminars and workshops for knowledge on latest printing techniques and innovative technologies.</td></tr>
<tr><td>Time:</td><td colspan="2">03 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">N/A</td></tr>
<tr><td>Tools</td><td colspan="2">N/A</td></tr>
<tr><td>PPE</td><td colspan="2">N/A</td></tr>
<tr><td>Materials</td><td colspan="2">National and International Magazines and Operation Manual</td></tr>
<tr><td>Key Point</td><td colspan="2">Ensure access to the relevant printing information</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Adopt upcoming market trends in printing trade by attending workshop and seminar.
• Participate in skill test for professional development with concentration.
• Participate in skill up-gradation courses with devotion.
• Participate in professional seminars with concentration to acquire first hand industrial knowledge.
• Participate in industrial visits on schedule.
• Consult senior experts to get advice.
• Watch videos/documentaries related with printing and packaging industry.
• Perform internet browsing related to printing industry.</td></tr>
<tr><td>Precautions:</td><td colspan="2">Gain first hand industrial knowledge by participating in professional seminars.</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
</table>

1. Visit printing exhibition to get exposure of latest techniques and technologies.	
2. Attend seminars to get updated with the latest printing techniques.	
3. Read printing magazines and improve the knowledge up to date with all the news and innovative technologies.	
4. Attend workshops related to the printing press for knowledge of the workflow of a printing press	

Learning Unit - :

LU 4: Utilize internet

Overview: This learning unit deals with effective communication by the use of Internet. It will help trainee to understand the procedure of creating new email, E-mail writing ethics and email sent confirmation.

Electronic mail: (email or e-mail) is a method of exchanging messages between people using electronic devices.

An e-mail account is an arrangement with a company which allows you to send and receive emails.

An email address is a unique identifier for an email account. It is used to both send and receive email messages over the Internet. Similar to physical mail, an email message requires an address for both the sender and recipient in order to be sent successfully.
Every email address has two main parts: a username and domain name. The username comes first, followed by an (@) symbol, followed by the domain name. In the example below, "mail" is the username and "techterms.com" is the domain name.

mail@techterms.com

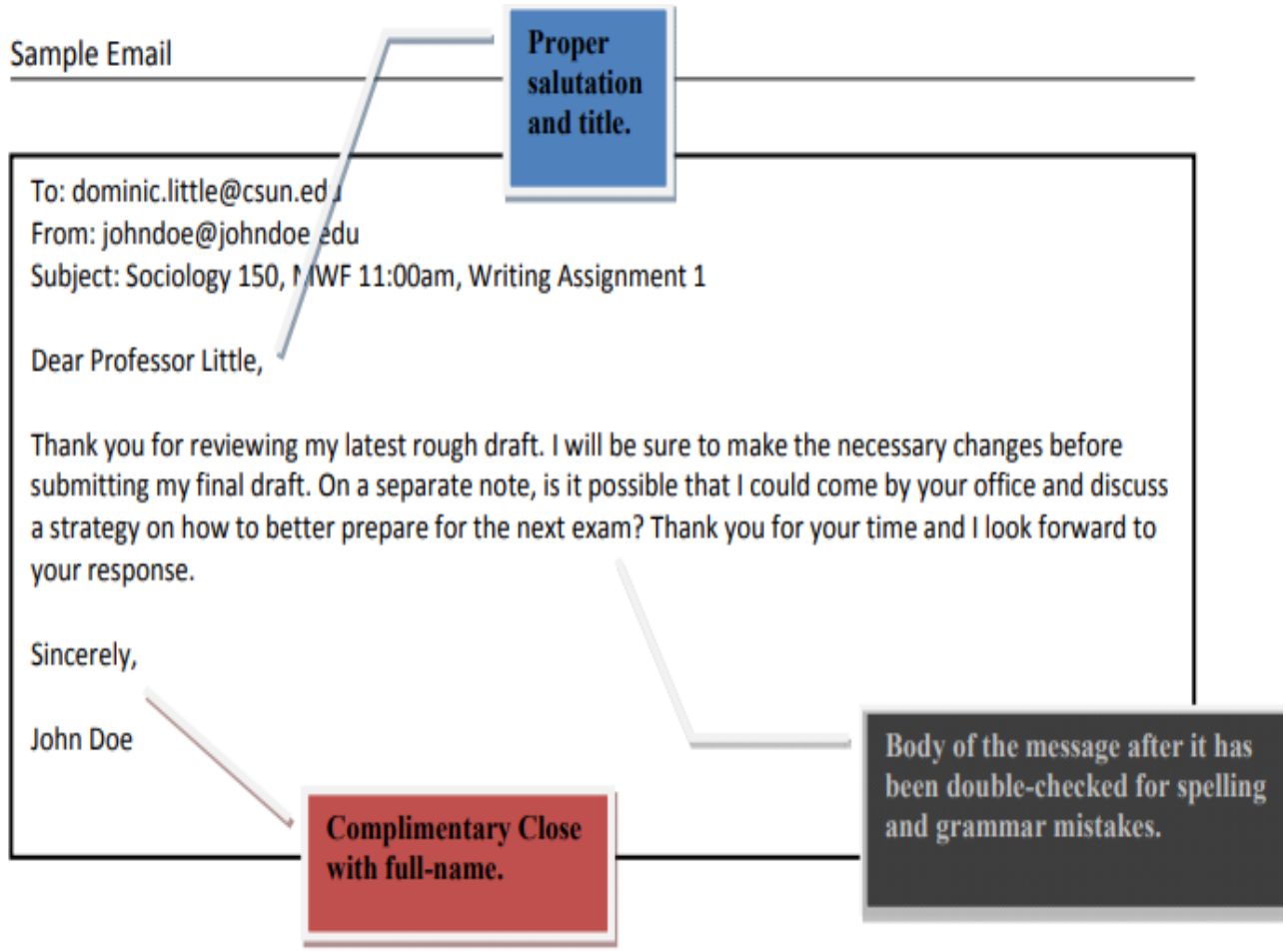
Remember

Communication- the human connection- is the key to personal and career success.

Paul i.Mever

E-mail Writing Ethics:

It is imperative that you remain professional during email communication and also ensure that information shared is approved by your supervisor as email can access at any time in the future.



Answer swiftly

Your customers send you email because they want quick responses. The golden rule for email is to reply within 24 hours

Use a meaningful Subject line

Try to use a subject that is meaningful to the recipient as well as yourself

Use the BCC Field

When you want to keep recipients hidden from people on the “To” field, then you add them to the Bcc field.

Read your email

Before you send the email treat it like any other official company document. Read it before you send it. Spelling and grammar errors are just as unfortunate in email as anywhere else in your corporate correspondence

Don’t attach unnecessary files

Wherever possible try to compress attachments and only send attachments when they are productive.

Browsing techniques to find appropriate web site

A **web** search engine is a software system designed to search for information on the World Wide **Web**. The search results are generally presented in a line of results often referred to as search engine results pages (SEROs). ... Some search engines also mine data available in databases or open directories.

10 tips for smarter, more efficient Internet searching

1: Use unique, specific terms. ...
2: Use the minus operator (-) to narrow the search. ...
3: Use quotation marks for exact phrases. ...
4: Don't use common words and punctuation. ...
5: Capitalization. ...
6: Drop the suffixes. ...
7: Maximize AutoComplete. ...
8: Customize your searches.

Method of e-mail sent confirmation:

By using suitable phrases, we can make the confirmation of email received at receiver end. Following are the phrases we can use in E-mails:

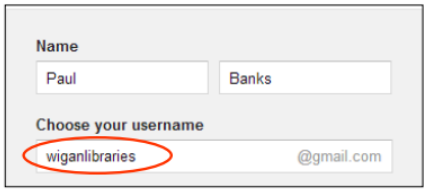
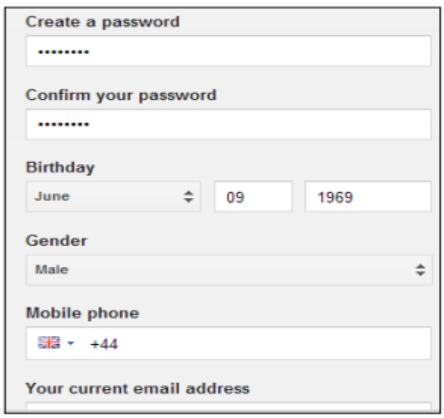
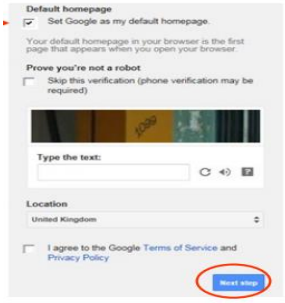
- I’d like to confirm …
- Just writing to confirm …
- Tuesday is good for me. Please send me an email by 5 pm today to confirm this…
- Looking forward to seeing/meeting …

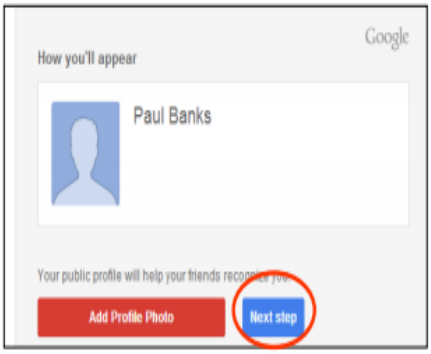
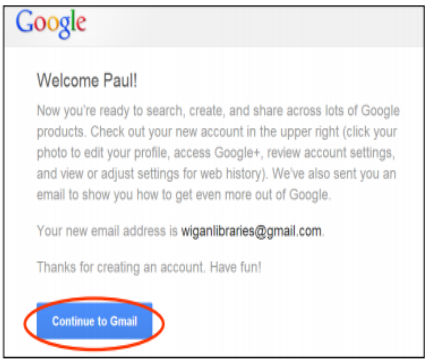
Identify internet browsing/search engine

To perform a search, you'll need to navigate to a search engine in your web browser, type one or more keywords—also known as search terms—then press Enter on your keyboard. In this example, we'll search for recipes. After you run a search, you'll see a list of relevant websites that match your search terms.

Practical Activity 1/1:

<table>
<tr><td rowspan="3">Module: 4</td><td colspan="2">Develop professionalism</td></tr>
<tr><td>Learning Unit: 4</td><td>Utilize internet</td></tr>
<tr><td>Practical Description:</td><td>Communication via E-mail with the help of internet.</td></tr>
<tr><td>Time:</td><td colspan="2">03 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">Computer with internet</td></tr>
<tr><td>Tools</td><td colspan="2">N/A</td></tr>
<tr><td>PPE</td><td colspan="2">N/A</td></tr>
<tr><td>Materials</td><td colspan="2">Handout on related topic, Flip Chart, Pen, Pencil ,Paper .Note book</td></tr>
<tr><td>Key Point</td><td colspan="2">Software downloading, data searching on different webs, fast communication and correspondence with concerns personals with the help of electronic mail.</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Ensure format or structure of the correspondence is according to company’s practice.
• Browse website as per desire.
• Download related software as per desire.
• Perform required communication via internet with in specified time limits.</td></tr>
<tr><td>Precautions:</td><td colspan="2">N/A</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Click on the internet explorer or google chrome icon for open any web page.</td><td>   </td></tr>
</table>

2. Click on address box and browse your required web page.	
3. Click on the google link on the people's network. Then click on the Gmail link near the top left of the page. If using a computer elsewhere perform an Internet search for Gmail. Click on create an account.	
4. Choosing your email address to set up your new account, Google needs some information about you. Type your first and last names. To create an email, you need to choose a username. Your email address will be your username followed by '@gmail.com'.	
5. Choosing your password that is 8 characters or more. Make sure your password is secure and one that you can remember! Secure passwords include combinations of upper and lowercase letters and numbers. Verifying your Gmail account type your birthday and gender. Enter your mobile telephone number or an alternative email address if you have one.	
6. Prove you're not a Robot! You may want to uncheck the box next to set Google as my default homepage'. Type in the letters or digits as they appear on the screen. Agree to the terms of service by checking the box.	

7. Click on next step. (you can add a profile picture at a later stage)	
8. You have created an email account! To start using email click on continue to Gmail.	

Learning Unit - :

LU 5: Prioritize job schedule

Overview: Production planning and control is a tool, available with management to achieve desired production/target. Thus, a production system is comprised of four factors i.e. quantity, quality, cost and time. This learning unit describes the production plan and its advantages.

Press room Key Performance Indicators (KPIs)

Key Performance Indicator (KPI) is a tool, used in a workplace to measure that how effectively they are achieving their goals. KPI is a way for businesses to quantify their business objectives so they can regularly check up on their performance and determine where they are successful and where they need to improve.

In a press room KPIs may be as follows.

- Percentage of defective prints compared to total number of units produced
- Percentage of on-time deliveries
- Consumable efficiency
- Job turn over

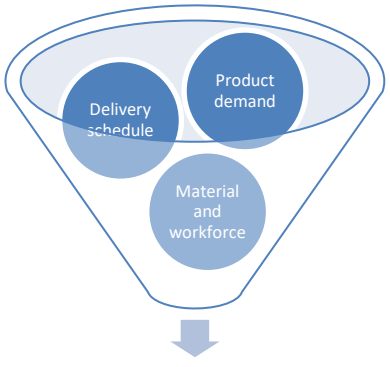
Production plan:

Production planning starts with the analysis of the given data, i.e., demand for products, delivery schedule, availability of required material and availability of workforce etc. On the basis of the information available, a scheme of utilization of firm's resources like machines, materials and manpower are worked out to achieve the target in the most efficient way.

Remember:

The key is

"Not to prioritize what's on schedule, but schedule your priorities".



Production Plan

Do you know?

Production planning and control can be defined as the "direction and coordination of firm's resources towards attaining the prefixed goals".

The objective of production planning and control is **to manage the materials and organizational capacities based on the customer needs**. Thus production planning

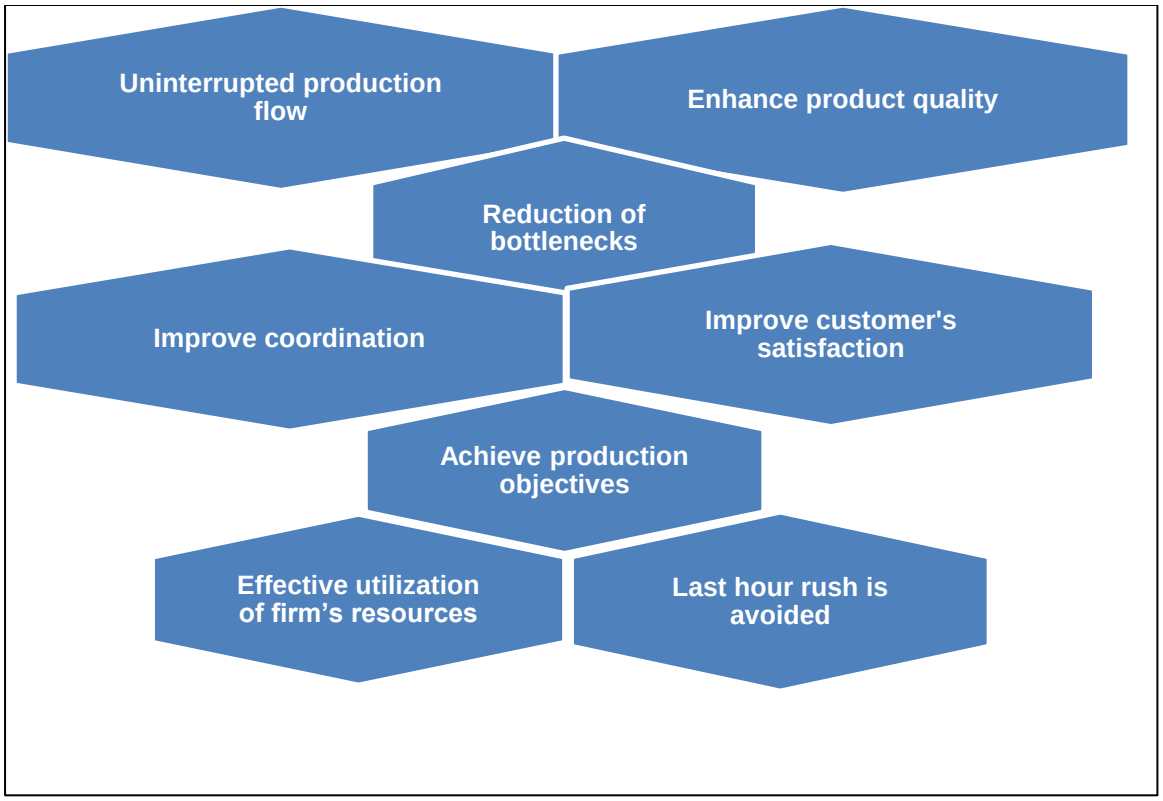
enables the industry professionals to deliver high quality products and fulfill customer demand efficiently.

Production Plan Example:

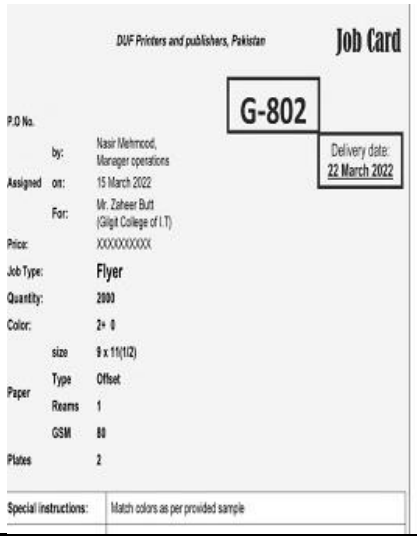
Production Plan									
SORK-1					**SORK-2**				
Shift	**Job No**	**Job Name**	**Time (Hours)**	**Delivery date**	**Shift**	**Job No**	**Job Name**	**Time**	**D.D**
MACHINE AND WORKSTATION CLEANING									
21 A	G-166 A		3.00	10.11.17	21 A	G-004 A		4	30.11.17
23 A	G-134 G-135		1.00	10.11.17					
1 HOUR LUNCH AND PRAYER BREAK									
24 A	G-262 A		1	10.11.17	24 A	G-008 A		3	30.11.17
24 A	G-262 B , D		2	10.11.17	25 A	G-0066 A		3	30.11.17
24 A	G-263 A		2	10.11.17	26 A	G-0023 A		1	30.11.17
MACHINE AND WORKSTATION CLEANING									

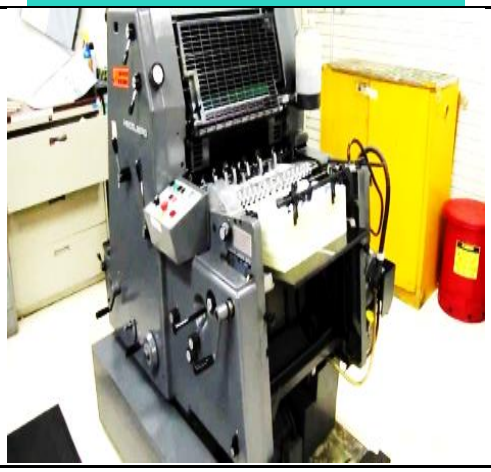
Advantages of maintaining production plan:

The implementation of production planning yields various advantages to any industry for functional activities, which includes the following:



Practical Activity 1/1:

<table>
<tr><td rowspan="3">Module: 4</td><td colspan="2">Develop professionalism</td></tr>
<tr><td>Learning Unit: 5</td><td>Prioritize job schedule</td></tr>
<tr><td>Practical Description:</td><td>Interpret docket / job card</td></tr>
<tr><td>Time:</td><td colspan="2">03 hours</td></tr>
<tr><td>Equipment</td><td colspan="2">N/A</td></tr>
<tr><td>Tools</td><td colspan="2">N/A</td></tr>
<tr><td>PPE</td><td colspan="2">N/A</td></tr>
<tr><td>Materials</td><td colspan="2">Docket / job card, log book</td></tr>
<tr><td>Key Point</td><td colspan="2">It is important to correctly interpret the job card in order to avoid confusion</td></tr>
<tr><td>Learning Outcome:</td><td colspan="2">• Interpret production plan as per supervisor’s instruction.
• Create daily schedule according to priority of production plan.
• Comprehend material priorities for hindrance less production,
• Develop list of required tools for hindrance less production,
• Calculate time required for production
• Determine sequence of activities.
• Report delays to superior in prescribed manners.</td></tr>
<tr><td>Precautions:</td><td colspan="2">Read carefully, do not miss out information.</td></tr>
<tr><td colspan="2">Instructions</td><td>Illustrations</td></tr>
<tr><td colspan="2">1. Collect the docket/job card</td><td> 
</td></tr>
</table>

2. Match the details with the provided equipment, materials and tools	
3. Match the size of substrate and number of plates provided with the docket/ job card.	
4. If found any error, report to the supervisor	
5. Note the time required for the job and the time available in the shift	
6. Start the printing process	

Summary of the Module

- To keep on progressing, you need to upgrade your knowledge and skill which can be acquired through trainings.
- A pressroom operator must have basic Math's knowledge for better material handling and calculation.
- A good pressroom operator should also have Basic English since most of the machine manuals and instructions are in English.
- A team player does not only do his/her task well but also helps his/her fellow team members to do well.
- Teaching learning materials (TLMs) are, tools, which are used by teachers to help learners to learn concept with ease and efficiency. TLMs also help learners to achieve the learning outcomes after classroom teaching.
- A *curriculum* is the combination of instructional practices, learning experiences, and students' performance assessment that are designed to bring out and evaluate the target learning outcomes of a particular course.
- Kaizen comes from two Japanese words: Kai (change) and Zen (good). Over time, it became known as "continuous improvement." Using Kaizen will result in many benefits. Some of the expected benefits will be:

    - Increased productivity
    - Improved quality
    - Better safety
    - Lower costs
    - Improved customer satisfaction

- 5S is the foundation of all improvements and it is the key component of establishing a work friendly press room. 5S stands for: Sort, Set in order, Shine, Standardize and Sustain.
- Key Performance Indicators (KPI) is a way for businesses to quantify their business objectives so that they can regularly check up on their performance and determine where they are successful and where they need to improve.
- Time Management refers to managing time efficiently so that the right time is allocated to the right activity. Effective time management allows individuals to assign specific time slots to perform activities as per their importance.
- Pressroom housekeeping means to keep the printing workstation clean and organized.
- Trade show is a platform to meet industry partners and customers and to understand recent market trends and explore innovative technologies. Professional personnel attend following events to enhance their knowledge and skills:

    - Seminars
    - Workshops
    - Meetings
    - Discussions
    - Competitions
    - Exhibitions

Frequently Asked Questions (FAQs)

Question	Answer
1. What will be the timing of training delivered at the workplace?	Training would be delivered in the routine working hours.
2. How can I be a team player if I concentrate on my job only?	Printing is a team work. Being good at your own job is not the only key to success. Helping coworkers and working as a team is equally important.
3. Is time management of the workplace is responsibility of the machine operator?	Yes, because time management is an integral part of a production plan.
4. Why participation in trade shows, workshops and seminars is important?	Participation in the trade shows, workshops and seminars is important as it familiarize the participants with new printing techniques and knowledge.
5. What do you mean by latest techniques in printing?	Latest printing techniques means ways to perform the job in a smarter and faster manner.
6. What are the benefits of latest printing techniques?	Benefits of latest printing techniques are • Good quality printing • Faster work flow • Less wastage of time and material
7. Why it is important to read printing related books and magazine?	It keep updated with the news in the industry and knowing what other competitor and business institutions are doing.
8. What is production planning	Direction and coordination of firms' resources towards attaining the prefixed goals.
9. What does production plan demand?	Product and Delivery Schedule
10. What is the advantage of production planning?	Production planning helps the company to supply quality products efficiently.

Self-Assessment

(MCQs)

Please mark the correct one from the given options. You can check your answer with the Answer Key at the end of this module

Q 1: With whom should you keep in touch in order to know about the new training opportunities in your organization?

a) Family
b) Supervisor
c) Current affairs
d) Other companies

Q 2: Most product descriptions and machine manuals are in:

a) English
b) Russian
c) Binary code
d) American

Q 3: In a pressroom, it's important to be a:

a) Fast talker
b) Religious preacher
c) Good team player
d) Runner

Q 4: KPI means?

a) Kilo per inch
b) Knowledge press integration
c) Potassium per Indium
d) Key Performance Indicator

Q 5: What is Kaizen?

a) A Japanese sword
b) A management method
c) Judo technique
d) Lab chemical

Q 6: Which of the following is objective of production planning?

a) Meetings
b) Result
c) Quality
d) None of the above

Q 7: To do good time management, one needs to be:

a) Lawful
b) Fit
c) Organized
d) Tough

Q 8: What are trade shows?

a) Dinner gathering
b) Where companies show their new technology and techniques.
c) Game shows
d) Class.

Q 9: Benefit of workshops:

a) Enhance skills
b) Develop healthy life style.
c) Develop eating habit.
d) Meeting friends.

Q 10: Who should attend trade shows?

a) People related to same industry
b) Hotel staff.
c) Cricket team.
d) Teachers

Answer Key

MCQ No.	Correct Answer
1	b
2	a
3	c
4	d
5	b
6	c
7	c
8	b
9	a
10	a

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