



GOVERNMENT OF TAMILNADU
DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI
STATE PROJECT COORDINATION UNIT
(Established under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	Offset Printing
Course Code	PT/2020/004
Course Duration	40 Hours
Minimum Eligibility Criteria and Pre-requisites (if any)	8th Std & above
Course Objectives	<p>Training module has been designed to provide the participants</p> <ul style="list-style-type: none"> • Understanding of the basics of offset printing. • Understanding of types of offset presses. • Understanding of types of sheet feeders and feeding mechanisms. • Understanding of sheet registering devices. • Learning of delivery section. • Knowing the construction and functions of plate cylinder, blanket cylinder and impression cylinder. • Knowledge of dampening and inking system. • Learning the makeready operations and safety precautions in an offset printing press.
Course Outcomes	<p>At the end of training, the participants will be able to</p> <ul style="list-style-type: none"> • Set the paper feeding mechanism. • Prepare the dampening system and dampening solution. • Prepare the inking unit. • Set the rollers in dampening and inking unit. • Set the delivery unit in an offset printing machine. • Print single color and two color in a single color sheet fed offset printing machine.
Expected Job Roles	Offset Machine Operator

TEACHING AND SCHEME OF EXAMINATION

Course Code	Course Name	Hours		Assessment Marks		Duration of Examination
				Min	Max	
PT/2020/004	Offset Printing	Theory	12	10	20	3 Hours
		Practical	28	40	80	
		Total	40	50	100	

PT/2020/004- Offset Printing

DETAILED SYLLABUS

Unit No	Modules	No.of.Hours	
		Theory	Practical
I	Introduction to Sheetfed Offset Presses	8 Hours	
1.1	Principles of Lithography and offset printing.	03	
1.2	Units of offset machine – Feeding unit, Printing unit and Delivery unit.		
1.3	Configuration and Structure of Sheetfed Presses: Single color, Multi color and convertible presses.		
1.4	Type of Presses: Inline Press, Stack Press, Blanket-to-Blanket Press and Common Impression cylinder Press.		
1.5	Feeder setting in single color sheet-fed offset printing machines.		05
1.6	Delivery setting in single color sheet-fed offset printing machines.		
II	Classifications of Offset Printing Machines	9 Hours	
2.1	Classification of Offset Machines – Basic configuration of Sheet fed offset machine.	03	
2.2	Single color sheet-fed offset press, Multi color sheet-fed press, Offset perfecting press and Small offset press.		
2.3	Classification of Web offset Machines – In-line web offset press, Blanket – to – blanket web offset press and Satellite type web offset press.		
2.4	Setting sheet registering devices.		06
2.5	Preparation of dampening system.		
III	Sheet Control and Delivery in Offset Press	11 Hours	
3.1	Types of Feeders – Friction feeders and Suction feeders, Types of Suction Feeders – Single sheet feeder and Stream Feeder.	03	
3.2	Feeder Head Components – Feeder Head, Air blast Nozzle, Rear Pickup Suckers, Forwarding Pickup Suckers, Sheet Steadiers, Separator Brushes and fingers. Feed board elements – Conveyor. Tapes, Running-in wheels, Conveyor assemblies and Forwarding rollers.		
3.3	Sheet Registering Devices – Front lay and Sidelay, Types of Front lay and Side lay. Sheet detectors – Early sheet and late sheet detectors, Cross sheet detectors.		
3.4	Delivery Section – Delivery Assist Devices, Suction Slow down Rollers, Blow downs, Wedges, and Anti set-off devices.		

3.5	Preparation of Inking system.		08
3.6	Roller setting in dampening system		
3.7	Roller setting in Inking System.		
IV	Printing Unit and Makeready	12 Hours	
4.1	Construction and functions of Plate Cylinder, Blanket Cylinder, Impression Cylinder, Transfer Cylinder and Delivery Cylinder.	03	
4.2	Types of Blankets: Conventional blanket and Compressible blanket.		
4.3	Inking System – Construction, Inking System Problems - Roller Streaks and Glazed Rollers.		
4.4	Dampening System – Construction, Composition of Dampening Solution - pH, Conductivity and Dampening system Roller setting.		
4.5	Types of Dampening System: Conventional or Intermittent.		
4.6	Make ready operations in offset printing machines and Safety precautions in press room.		
4.7	Make ready procedures for single color printing.		09
4.8	Two color printing in single color sheet fed offset printing machines.		
4.9	Cleaning of dampening and inking systems.		
Total Theory / Total Practical Hours		12	28
Total hours		40	

HARDWARE REQUIREMENT

S.NO	LIST OF TOOLS /EQUIPMENTS
1.	Single color sheet-fed offset printing machine
2.	Micrometer
3.	Durometer
4.	pH Meter
5.	Densitometer
6.	Conductivity Meter
7.	Packing Gauge
8.	Magnifier

SOFTWARE REQUIREMENT

NIL

REFERENCE BOOKS

S.NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1.	Modern Lithography	Ian Faux	MacDonald & Evans
2.	Printing Materials – Science and Technology	Thompson, Bob	Pira International
3.	The Print Production Manual	J. Peacock, C. Berril and M. Barnard	Pira International
4.	The Printing Ink Manual	R.H. Leach and R.J. Pierce.	Springer
5.	Hand Book of Print Media	Helmut Kipphan	Springer
6.	Sheetfed Offset Press Operating	Lloyd P Dejidas and Thomas M Destree	GATF

ASSESSMENT AND CERTIFICATION

S.No	Criteria for Assessment
1.	A trainee will be assessed based on the performance in End Examination for Theory and Practical conducted internally in the Project Polytechnic College for a duration of 3 hours
2.	A trainee must have 75% of attendance to appear for End examination in Theory and Practical.
3.	The assessment for theory part will be based on the marks scored in the end examination on the knowledge bank of questions (1 word/objective type questions)
4.	The assessment for practical part will be based on the marks scored in the end examination conducted by the Project Polytechnic and assessed by the Examiners approved by Strategic Plan Implementation Committee (SPIC) of the project polytechnic.
5.	The criteria for successful completion of training is every trainee should score 50% of marks in theory and practical examination.
6.	On successful completion of training , Certificate will be issued to the participants by the Directorate of Technical Education through the Project Polytechnic.

END EXAMINATION

ALLOCATION OF MARKS

S.No	Description	Max.Marks
1.	Theory	20
2.	Practical Examination	
	a)Procedure – 10 Marks b)Exercise – 50 Marks c) Record – 20 Marks	80
Total Marks		100

THEORY MODEL QUESTION PAPER

PT/2020/004 - OFFSET PRINTING

Maximum Marks: 20

(N.B.: Answer any Twenty question)

20 X 1 = 20 Marks

1. Write the lithography principle.
2. What are the units of offset machine?
3. Write any two types of offset presses.
4. Write any two parts of feeding unit.
5. Define single color offset printing machine.
6. What are the classifications of offset machine?
7. Write any two types of web offset machines.
8. What is the pH value of dampening solution?
9. Name the cylinders of offset printing machine.
10. What is multicolor offset printing?
11. Write any two types of feeder?
12. What is single sheet feeder?
13. Write any two components of feeder head?
14. What are the two different suckers?
15. Write two registering devices.
16. Name any two devices in delivery section.
17. Write any two inking rollers.
18. Where the plate is fixed in offset machine?
19. Write two types of blanket.
20. Name two roller problems.
21. Write any two composition of dampening solution.
22. Write any two safety precautions.
23. Name any two dampening rollers.
24. What is makeready?
25. Write the process ink colors.