

Course Curricula

for

**Short Term Courses based on
Modular Employable Skills (MES)**

in

Printing Sector



**DIRECTORATE GENERAL OF EMPLOYMENT AND TRAINING
MINISTRY OF LABOUR & EMPLOYMENT
GOVERNMENT OF INDIA**

**Course Curricula for Short Term Courses based on Modular
Employable Skills (MES) in the Printing Sector**

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Skill Development based on Modular Employable Skills (MES)

Background

The need for giving emphasis on the Skill Development, especially for the less educated, poor and out of school youth has been highlighted in various forums. The skill level and educational attainment of the work force determines the productivity, income levels as well as the adaptability of the working class in changing environment. Large percentage of population in India is living below poverty line. One of the important causes is lower percentage of skilled persons in the workforce

The skill development at present is taking place mostly in the informal way, i.e. persons acquire skill at the work-place when they help their parents, relatives and employers etc. Such persons do not have a formal certificate and thus earn lower wages and are exploited by employers. They have come through informal system due to socio-economic circumstances of the family and the compulsions of earning a livelihood rather than attending a formal course. While their productivity is low, their contribution to the national GDP cannot be ignored. If the country can create a system of certification which not only recognizes their skills but also provides education and training in a mode that suits their economic compulsions, it will not only benefit the workforce to earn a decent living but also contribute to the national economy by better productivity of this workforce.

Another related problem to be tackled is large number of students drop outs (About 63% of the school students drop out at different stages before reaching Class-X).

Frame work for Skill Development based on 'Modular Employable Skills (MES)'

Very few opportunities for skill development are available for the above referred groups (out of school youth & existing workers especially in the informal sector). Most of the existing Skill Development programmes are long term in nature. Poor and less educated persons can not afford long term training programmes due to higher entry qualifications, opportunity cost etc. Therefore, a new frame work for Skill Development for the Informal Sector has been evolved by the DGET to address to the above mentioned problems. The **key features of the new frame work for skill development** are:

- ◆ Demand driven Short term training courses based on modular employable skills decided in consultation with Industry
- ◆ Flexible delivery mechanism (part time, weekends, full time)
- ◆ Different levels of programmes (Foundation level as well as skill upgradation) to meet demands of various target groups
- ◆ Central Government will facilitate and promote training while Vocational Training (VT) Providers under the Govt. and Private Sector will provide training
- ◆ Optimum utilisation of existing infrastructure to make training cost effective.
- ◆ Testing of skills of trainees by independent assessing bodies who would not be involved in conduct of the training programme, to ensure that it is done impartially.
- ◆ Testing & certification of prior learning (skills of persons acquired informally)

The Short Term courses would be based on 'Modular Employable Skills (MES)'.

The **concept for the MES** is :

- Identification of 'minimum skills set' which is sufficient to get an employment in the labour market.
- It allows skills upgradation, multiskilling, multi entry and exit, vertical mobility and life long learning opportunities in a flexible manner.
- It also allows recognition of prior learning (certification of skills acquired informally) effectively.
- The modules in a sector when grouped together could lead to a qualification equivalent to National Trade Certificate or higher.
- Courses could be available from level 1 to level 3 in different vocations depending upon the need of the employer organisations.
- MES would benefit different target groups like :
 - Workers seeking certification of their skills acquired informally
 - workers seeking skill upgradation
 - early school drop-outs and unemployed
 - previously child labour and their family

Age of participants

The minimum age limit for persons to take part in the scheme is 14 years but there is no upper age limit.

Curriculum Development Process

Following procedure is used for developing course curricula

- Identification of Employable Skills set in a sector based on division of work in the labour market.
- Development of training modules corresponding to skills set identified so as to provide training for specific & fit for purpose
- Organization of modules in to a Course Matrix indicating vertical and horizontal mobility. The course matrix depicts pictorially relation among various modules, pre requisites for higher level modules and how one can progress from one level to another.
- Development of detailed curriculum and vetting by a trade committee and by the NCVT

(Close involvement of Employers Organizations, State Governments, experts, vocational training providers and other stake holders is ensured at each stages).

Development of Core Competencies

Possession of proper attitudes is one of the most important attribute of a competent person. Without proper attitudes, the performance of a person gets adversely affected. Hence, systematic efforts will be made to develop attitudes during the training programme.

The trainees deal with men, materials and machines. They handle sophisticated tools and instruments. Positive attitudes have to be developed in the trainees by properly guiding

them and setting up examples of good attitudes by demonstrated behaviors and by the environment provided during training.

Some important core competencies to be developed are:

1. Safety consciousness and safe working practices
2. Care of equipment and tools
3. Punctuality, discipline and honesty
4. Concern for quality
5. Respect for rules and regulations
6. Concern for health and hygiene
7. Cordial relationship and Cooperation with co-workers and team Work
8. Positive attitude and behavior
9. Responsibility and accountability
10. Learn continuously
11. Communication Skills
12. Concern for environment and waste disposal

Following competencies should also be developed during level-II and higher courses:

1. Ability for planning, organizing and coordinating
2. Creative thinking, problem solving and decision making
3. Leadership
4. Ability to bear stress
5. Negotiation

Duration of the Programmes

Time taken to gain the qualification will vary according to the pathway taken and will be kept very flexible for persons with different backgrounds and experience. Duration has been prescribed in hours in the curriculum of individual module, which are based on the content and requirements of a MES Module. However, some persons may take more time than the prescribed time. They should be provided reasonable time to complete the course.

Pathways to acquire Qualification:

Access to the qualification could be through:

- An approved training programme; **Or**
- A combination of an approved training programme plus recognition of prior learning including credit transfer; **Or**
- The recognition of prior learning that provides evidence of the achievement of the competencies for the qualification.

Methodology

The training methods to be used should be appropriate to the development of competencies. The focus of the programme is on “performing” and not on “Knowing”. Lecturing will be restricted to the minimum necessary and emphasis to be given for ‘hands on training’.

The training methods will be individual centered to make each person a competent one. Opportunities for individual work will be provided. The learning process will be continuously monitored and feedback will be provided on individual basis.

Demonstrations using different models, audio visual aids and equipment will be used intensively.

Instructional Media Packages

In order to maintain quality of training uniformly all over the country, instructional media packages (IMPs) will be developed by the National Instructional Media Institute (NIMI), Chennai.

Assessment

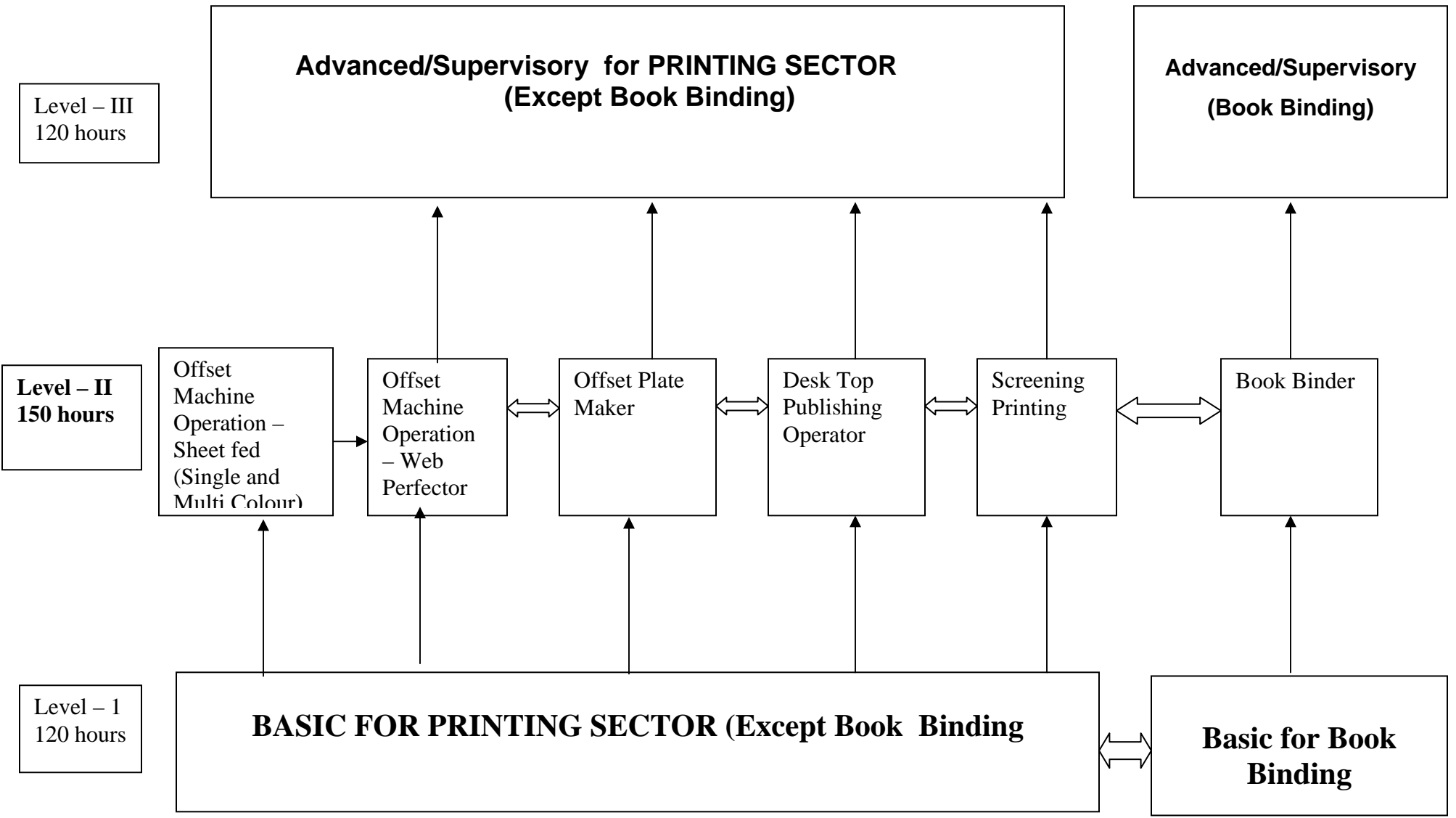
DGE&T will appoint assessing bodies to assess the competencies of the trained persons. The assessing body will be an independent agency, which will not be involved in conducting the training programmes. This, in turn, will ensure quality of training and credibility of the scheme. Keeping in view the target of providing training/testing of one million persons through out the country and to avoid monopoly, more than one assessing bodies will be appointed for a sector or an area.

Certificate

Successful persons will be awarded certificates issued by National Council for Vocational Training (NCVT).

Course Matrix

for the PRINTING Sector under 'M E S'



Basic for Printing Sector (Except Book Binding)

Name : **BASIC FOR PRINTING SECTOR (Except Book Binding)**
 Sector : **Printing**
 Code : **PRI101**
 Entry Qualification: Minimum 8th standard onwards and 14 Years of Age
 Terminal Competency: The person would be able to assist in:
 i) Desk Top publishing Operating,
 ii) Offset Plate Making,
 iii) Offset Machine Operating,
 iv) Screen Printing

Space: 5 sq.meter/trainee Power: 5 to 7 KVA
 Duration: 120 Hrs.

Practical Competencies	Underpinning Knowledge (Theory)
<p>Familiarization with tools and equipment & safety Practices</p> <ul style="list-style-type: none"> ✓ Familiarization with the general tools and equipment used in printing industry, Safety hazards, preventive measures and safety precautions for usage of various operations and chemicals, pollution control etc. ✓ Handling and care of raw materials; upkeep of various types of plate- surface, deep etch, pre – sensitized and wipe on plates. 	<ul style="list-style-type: none"> ✓ History of printing, comparative analysis of different printing processes ✓ Lithographic plates, its various types, handling and care. ✓ Use of various types of measuring equipment, gauges etc., their use and relevance to Off-set printing
<p>Computer Operating System & Principle of Graphic Design</p> <ul style="list-style-type: none"> ✓ Handling and operating the Computer, using desk-top bars, start button, menus and help menus. ✓ Principle of graphic design and its simple applications. 	<ul style="list-style-type: none"> ✓ Standard Paper sizes, Indian and British. Divisions, sub- divisions, kinds, qualities and its suitability to different printing jobs. ✓ Handling & care of printed and unprinted paper
<p>Printing Surfaces, Ink & Measuring Tools</p> <ul style="list-style-type: none"> ✓ Familiarization with various printing surfaces like litho-stone plates made of zinc, copper, Aluminum and pre-sensitized plates, their care and handling procedure. ✓ Handling, care and use of various types of measuring gauges like Hygrometer, Brume thermometer, Densitometer etc. ✓ Preparing tint, shades, matching and mixing of ink; Tack, length, flow and use of reducer and drier 	<ul style="list-style-type: none"> ✓ Printing Ink, Component of different types of ink. , tint, shades, matching and mixing of ink; Tack, length, flow and use ✓ Colour: Principle, theory of colour separation, filter, sequence of colour printing, Black printer of reducer and drier ✓ Theory of dot formation: Highlight and Shadow
<p>Imposing System</p> <ul style="list-style-type: none"> ✓ Rules of imposition, Simple imposing scheme and its relation to the type of folding methods applicable, Lining up table, Lay out sheets preparation. 	<ul style="list-style-type: none"> ✓ Simple imposing scheme and its relation to the type of folding methods applicable upto 16 pages.

List of Tools and Equipment

Sl.No.	Description of item
1	Computer of latest specification
2	Software: Page Maker and other standard software.
3	Laser printer
4	Plate storage cabinet
5	Lining up table – size Double Demy or equivalent
6	Plate drying cabinet 30x40 cm with 2.5 cm slots.
7	Densitometer
8	Ink slab 50x50 cm
9	Fire Extinguisher
10	Hydrometer(heavier than water)
11	Timer
12	Dry & wet bulb
13	Steel rule, graduated
14	Gloves
15	Scalpel handle with blade No. 3 blade No. 3
16	Densitometry (Ref lection & transmission type)
17	Drafting machine,
18	Magnifying glass (+8)
19	Cupboard steel
20	Ems scale,
21	Set squares (18 inch Size)
22	Tool Kits of standards make
23	Wooden working table with sunmica top 5,x3, sizes.
24	Hygrometer
	Standard Raw- Material
1	Ink: Different types of ink, cyan. Magenta, yellow, black, white, Drier and reducer
2	Paper: Different types of paper, card sheets
3	Printing Plates: Zinc, Copper, Aluminum, pre-sensitized, Master.

BASIC – Book Binding Sector

Name : **BASIC – Book Binding SECTOR**
 Sector : **Printing**
 Code : **PRI102**
 Entry Qualification: Minimum 8th standard onwards and 14 Years of Age
 Terminal Competency: The person would be able to assist in Book Binding
 Space: 5 sq.meter/trainee Power: 5 to 7 KVA
 Duration: 120 Hrs.

Practical Competencies	Underpinning Knowledge (Theory)
Familiarization with the general tools and equipment used in printing industry,	History of printing, comparative analysis of different printing processes
Rules of imposition, Simple imposing scheme and its relation to the type of folding methods applicable, Lining up table, Lay out sheets preparation	. Simple imposing scheme and its relation to the type of folding methods applicable upto 16 pages
Handling and care of raw materials; Safety hazards, preventive measures and safety precautions for usage of various operations and chemicals, pollution control etc	Standard Paper sizes, Indian and British. Divisions, sub- divisions, kinds, qualities and its suitability to different printing jobs. Handling & care of printed and unprinted paper.
Practice on Various book binding techniques / Stitching machines etc.	Classification of various book binding methods
	Storage of various materials use in bindry shop.

List of Tools and Equipment (Basic courses under Book Binding)

Sl.No.	Description of items
1.	Wire stitching machine 1" (2.5 cm)
2.	Screw press (2 different sizes)
3.	Paper cutting machine, size (90 cm.) or three size trimmer
4.	Wooden planks (size 2'1') (60 x 30 x 2.5 cm)
5.	Needle for sewing
6.	Bone knife for folding
7	Spiral binding machines
8	Nipping Press
9.	Hand numbering machine
10.	Perforating machine (60 cm), (treadle type)
11.	Punching machine (with a set of punches)
12.	Eyeleting and punching machine
13.	Corner cutting machine (treadle type)
14.	Creasing machine
15.	Board cutter
16.	Paper cutting knives, hand
17.	Scissors
18.	Hammer 250 gm.

19.	Bodkins
20.	Pairing knives (for leather)
21	Brushes 25 mm., 50 mm., 100 mm. (In equivalent metric sizes) available
22	Steel rule (60 cm)
23	Racks for paper
24	Work table (240 x 120 x 75 cm)

Offset Machine Operation – Sheet fed (Single and Multi colour)

Name : Offset Machine Operation – Sheet fed (Single and Multi colour)

Sector : Printing

Code: PRI205

Entry Qualification: Minimum 10th Standard and 14 Years of Age. Should have completed the Corresponding basic module(PRI101)

Terminal Competency: The operator will be able to operate the Off-set Machine for printing both single, multicolour , dry machines jobs

Duration: 150 Hrs.

Practical Competencies	Underpinning Knowledge (Theory)
Familiarization with the tools and equipment and machinery used in offset printing process,	Equipment and material used for making various Off-set plates, photo-chemical process for plate making for use in Off-set Machines.
Cleaning, lubrication & general maintenance of machinery & equipments.	Lithographic plates, its various types, handling and care.
Classification of various components of the Off-set Machines	Rollers-kinds, setting, cleaning, preparation, treatment, handling and storage
Sheet fed Offset printing machines – single and multi colour – basic configuration, handling and care, preparation for printing, fixing the plate, lays setting , setting of inking and dampening system, - initial and actual setting, setting of feeders. Handling, care and fixing of blanket.	Various types of Off-set Printing Machines- both single and multi colour.
Rollers-kinds, setting, cleaning, preparation, treatment, handling and storage.	General care and maintenance of plate-making and litho offset printing machine and equipment.
Dry offset printing / Flexography)on various kinds of material.	Dry (Flexography printing on various kinds of material)
Registration device.	Registration device.
Handling and care of Off-set Printing Machine, preparing the machine for printing by fixing the plate, set right the inking and dampening system, setting of manual/ automatic feeder.	Types of offset printing Dry & Wet,
Running defects	Running defects: causes and remedies.
Setting and adjustment of plate for line and half tone work.	
Defective plates- causes and remedies, running problems	

**List of Tools and Equipment for
Offset Machine Operation – Sheet fed (single & multi colour)**

Sl.No.	Description of item
1	Single colour offset printing machine with automatic feeder and accessories.
2	Multi colour offset printing machine with automatic feeder and accessories
3	Machines Tools. (Standard set).
4	Roller cleaning machines, cleaning liquids.
5	Roller racks
6	Ink slab and pallet knives.
7	Gloves
8	Primary inks, cyan, magenta, yellow, white, black
9	Reducer, drier, extender,
10	Lubricating oils. Oil cane.
11	Fountain solution, sponges, linen cloth,
12	Image remover
13	Magnifying glass (+8)
14	PH tester - Electronics
15	Work bench and table standard size.
Raw material	
1	Various types of Papers, cards
2	Other printing material
3	Chemicals used on machines and rollers.
4	ph Strips.

Offset Machine Operation – Web Perfector

Name :	Offset Machine Operation – Web Perfector
Sector :	Printing
Code:	PRI206
Entry Qualification:	Minimum 10 th Standard and 14 Years of Age. Should have completed the Corresponding basic module(PRI101)
Terminal Competency:	The operator will be able to operate the Off-set Web perfector multi colour Machine for printing multicolour , dry machines (Flexography/nylography) jobs
Duration:	150 Hrs.

Practical Competencies	Underpinning Knowledge (Theory)
Familiarization with the tools and equipment and machinery used in Off-set Web perfector multi colour Machine printing process.	Equipment and material used for making various Off-set plates, photo-chemical process for plate making for use in Off-set Machines.
Cleaning, lubrication & general maintenance of Off-set Web perfector multi colour Machine machinery & equipments.	Lithographic plates, its various types, handling and care.
Classification of various components of the Off-set Web perfector multi colour Machine	Rollers-kinds, setting, cleaning, preparation, treatment, handling and storage
Off-set Web perfector multi colour Machine – basic configuration, handling and care, preparation for printing, fixing the plate, lays setting, setting of inking and dampening system, - initial and actual setting, setting of feeders. Handling, care and fixing of blanket.	Various types of Off-set Web perfector multi colour Machine
Setting of electronic, computerized machine controls : Electronic eye, for colour registration, Web detector, numbering, folding, trimming etc.	Setting of electronic, computerized machine controls : Electronic eye, for colour registration, Web detector, numbering, folding, trimming etc
Rollers-kinds, setting, cleaning, preparation, treatment, handling and storage. Alignment of cylinders.	General care and maintenance of plate-making and Off-set Web perfector multi colour Machine and equipments.
Dry offset printing / Flexography) on various kinds of material.	Dry (Flexography printing on various types on different kinds of material)
Registration device.	Registration device.
Handling and care of Off-set Printing Machine, preparing the machine for printing by fixing the plate, set right the inking and dampening system, setting of manual/ automatic feeder.	Types of offset printing Dry & Wet,
Running defects	Running defects: causes and remedies.
Setting and adjustment of plates for line and half tone work.	Safety practices: Preventive measures.
Defective plates- causes and remedies, running problems	
Safety practices: Preventive measures.	

**List of Tools and Equipment for
Offset Machine Operation – Off-set Web perfector multi colour Machine)**

Sl.No.	Description of item
1	Off-set Web perfector multi colour Machine and accessories .
2	Machines Tools. (Standard set).
3	Roller cleaning machines, cleaning liquids.
4	Roller racks
5	Ink slab and pallet knives.
6	Gloves
7	Primary inks, cyan, magenta, yellow, white, black
8	Reducer, drier, extender,
9	Lubricating oils. Oil cane.
10	Fountain solution, sponges, linen cloth,
11	Image remover
12	Magnifying glass (+8)
13	PH tester - Electronics
14	Work bench and table standard size.
Raw material	
1	Various types of Papers, cards
2	Other printing material
3	Chemicals used on machines and rollers.
4	PH Strips.

List of Tools and Equipment for Offset Machine Plate Maker

Sl.No.	Item Name. Description & Specification
1.	Acetate sheets
2.	Lining up table of appropriate size
3.	Printing Down frame with built in mercury vapour lamps
4.	Glass Jar / Container (For keeping / mixing solution)
5.	Measuring Cylinder – different sizes
6.	Enamel / Glass funnel
7.	Hydrometer for measuring Beaume
8.	Timer
9.	Sink (180 cm X 750 cm X 20 cm.)
10.	Room Thermometer
11.	Hygrometer
12.	Steel Rule graduated
13.	Micrometer (0-25 mm), (25-50 mm)
14.	Vernier Caliper
15.	Spatula – long & small size
16.	Image remover
17.	Densitometer
18.	Hand gloves
19.	Magnifying Glass (X 8)
20.	Fire Extinguisher
21.	Ink slab 50 x 50 cm
22.	Development Tray
23.	Plate drying cabinet 30 X 40 cm with 2.5 cm slots
24.	Re- touching table – 50 X 75 cm
25.	Magnifying glass
26.	Heater 1500 watt
27.	Rubber Squeezer 30 cm
28.	Plate storage Cabinet
RAW MATERIALS	
1	Pre sensitized (PS) plates of different sizes,
2	Pre grained plates.
3	Wipe on plates A & B Sensitizer. Plate developer, Finisher, Uni gum, Sponge
4	PS developer, correcting liquid solution, Brush, Acetate lay out sheets

Desk Top Publishing Operator

Name : Desk Top Publishing Operator
Sector : Printing
Code: PRI208
Entry Qualification: Minimum 10th Standard and 14 Years of Age. Should have completed the Corresponding basic module(PRI101)

Terminal Competency: The operator will be able to operate the Computer and do the page setting / composing using DTP Software

Duration: 150 Hrs.

	Practical Competencies	Underpinning Knowledge (Theory)
1.	Practice for operating the Computer, Installing Windows, using desk-top bars, start button, menus and help menus.	Introduction to Desktop Publishing, its origin
2.	Creating , deleting and renaming folders, short cuts, starting an application, shut-down and re-start, work with zip-files , search file, rename file, viewing disk space , Using Note Pad, MS Word, inserting picture, working with image, paint brush, character map, symbol tools.	Components of Desktop Publishing, System, the traditional Publishing , and Publishing under PC environment.
3.	Practice on computer, page composition, scanning text and picture using scanner, preparation of films on image setter, Font style, size, Super script and Sub script, use of special character, text editing, Selecting word, paragraph, indenting/tabs, find and change dialog box, text re-composition	Concept of publishing, creating publishing page. System of page folding with different options (single fold, double fold, reverse side fold), scanning photos & images.
4.	Types of file formats e.g. GIF, JPG & PDF files, Importing and Exporting pallet control, colour pallets, style, master page pallet, removing master page pallet, removing master page objects from page	Computer application in pre-press work. Composing, scanning, colour mixing, image processing etc.
5.	Making tables, editing datas in table .Use of Ruler Guide, column guide and library, Importing/Exporting filing, stroking frames, arranging, text wrapping.	Use of Page Maker Software. Application of Page Making, use of DTP features, introduction & application of Adobe in designing.
6.	Use Page Maker software for designing cover page of Books, creating book with publishing software , Charts, Linking large graphics, make positive films for screen-printing.	Concept & features of Corel Draw, graphics, concept of layer pallet , applications.
7.	Use of Corel Draw , special effects on graphics, text, importing / exporting graphics	Concept of bitmaps, vector graphics, use of plotter and its application

8.	Practice on Adobe Illustrator, Photoshop and create various printing effects, retouching photographs, convert modified picture for DTP. Use Plotter	Concepts of Photoshop and its application.
9.	Use of Web Cam / Digital camera, use them for DTP work.	Introduction to digital photographic technology, use of web camera and digital camera. Theory of Dot formation.

List of Tools and Equipment for Desk Top Publishing Operator

Sl.No.	Item Name. Description & Specification
	Hardware
1	Pentium IV Processor 2.66 GHz 512 MB DDR RAM, 80 GB HDD 3.5" FDD 52 X CD Drive(ComboR/RW), 15" SVGA color Monitor with 32 MB Graphic Adopter, 3 button Mouse, 105 keys key board and built-in speakers and mic., modem card , optical Scroll mouse or higher version
2	Laser Printer Colour
3	Scanner Digital
4	10 Port Hub
5	Ethernet cords 10X 100 mpbh
6	UPS 05 KVA
7	Air Conditioner 1.5 ton
8	Telephone Line (for internet)
9	Room temperature thermometer
10	Fire extinguisher
11	Digital Camera (4.2, 5.1, M Pixel)
12	Web Camera
	SOFTWARE
1	MS Office latest version
2	Adobe Page Maker latest version, Oral Draw, Photoshop Macromedia Products
3	Anti Virus Latest version
4	Algol/Chalontika/1-Leap/Leap Office (An one of these or any other multi lingual software latest version)
5	Fact/Talley/ACE, Ex-Engine (any one of these or any other financial Accounting software latest version)
	FURNITURE
1	Straight back revolving & adjustable chairs (computer Chairs)
2	Computer Tables
3	Printer Tables

Screen Printing

Name : Screen Printing
Sector : Printing
Code: PRI203

Entry Qualification: Minimum 8th Standard and 14 Years of Age. Should have completed the Corresponding basic module(PRI101)
Terminal Competency: The operator will be able to perform the Screen Printing operations
Duration: 150 Hrs.

	Practical Competencies	Underpinning Knowledge (Theory)
1.	Safety hazards, preventive measures and safety precautions for usage of various chemicals used.	Equipment and materials used in retouching work, retouching desk, illuminating lighting and viewing, factors affecting colour judgment.
2.	Preparation of raw material, various printing inks, screen and other miscellaneous raw material, preparation of various printing surfaces	Printing surfaces- outline screen printing processes, composing (DTP), stencils and designs.
3.	Prepare screen by direct process using direct coating material and indirect process (transfer process)- pigment paper, screen cloth. Exposing photographic plates and films for screen printing.	Safety hazards, preventive measures and safety precautions for usage of various chemicals used.
4.	Storage of screens – precautions for cleaning & storing the screen, line screen, screen angle, screen distance, dot formation, contact screens.	Photographic materials, plates and films, emulsions, preparation, handling and care.
5.	Arrange colour separation using scanner.	Use of screen sheets, tint laying and their maintenance.
6.	Prepare different types of jigs and frame for bolting clothes	Equipment and materials used in preparation of jigs and frames, bolting cloth, printing table, different adhesives used, handling and care.
7.	Storing of films, size of film, use of positive films, humidity control of the process room, washing the exposed film, adhering the stencil to the mesh and drying. Stripping off the backing film, cleaning off used stencil and using different methods	Screen printing processes, storing of films, sizes, using positive films, how to expose develop and edit etc.
8.	Prepare different screen material	Effect of humidity on the film coating, hardening of the film, developing of the exposed film, transferring the stencil selection of mesh for bolting cloth to be printed on different material.
9.	Introduction of machines and mechanical screen printing	

LIST OF TOOLS AND EQUIPMENT SCREEN PRINTING

1.	Table of suitable size
2.	Frames – different sizes
3.	Screens – silk or other material – different sizes, Squeegee
4.	Variety of ink- water waste, solvent free inks, permanent acrylic and textile inks
5.	Water resistant masking tape- one inch wide
6.	Screw driver, old newspapers, sheet of cardboards etc.
7.	Scrub brush, scissors, small lamp or lamp chord with standard socket, 150 Watt incandescent bulb.
8.	Cellotape, paper towel, 9” x 12” piece of glass, rubber gloves etc.
9	Magnifying Glass

Book Binder

Name : Book Binder

Sector : Printing

Code: PRI204

Entry Qualification: Minimum 8th Standard and 14 Years of Age. Should have completed the Corresponding basic module(PRI102)

Terminal Competency: The operator will be able to perform the various sequence of binding work leading to Book Making or any other related binding work.

Duration: 150 Hrs.

	Practical Competencies	Underpinning Knowledge (Theory)
1	Cleaning/lubricating and general maintenance of the machinery & Equipment	Structure of Book and various book binding methods. Styles of binding.
2	Standard folding / standard folding schemes of 16 pages	Material used in Binding – paper, board, book cloth leather, handling, care, sizing etc.
3	Gathering and collating, signatures, their use for making up a book.	Paper- Standard sizes – divisions and subdivisions, kinds and qualities, handling & care of printed and un-printed sheets of paper
4	Stitching – hand and wire stitching, Side and centre stitch Spiral binding of different types.	Machinery & Equipment used in Binding – Guillotine, three sides trimmer, perforating, etc – handling, care and safety precautions.
5	Sewing , Tape, cord, swan – in swing, over casting, Forwarding operations, Case making and finishing Operation : Rounding and backing, tipping knocking and counting	Folding – standard folding schemes upto 16 pages
6	All kinds of End papers pasting, adhesives its preparation and use	Gathering and collating, signature and their use
7	Use of Guillotine machine (3 side trimmer) and safety precautions.	Stitching & sewing, hand and machine methods.
8	Adhesives its preparation and use	
9	perforating, numbering, eyeleting , equipment used and handling and precautions	End paper, kinds and purpose
10	Flush binding, Case binding	Forwarding operations, Case making and finishing Operation : Rounding and backing, tipping knocking and counting backing, case making by hand, tools required .
11	Edge decoration – Guiding, Marbling, Colouring, Tinting indexing, tabbing, gold tooling, Blind tooling	Tipping and pasting of plates, maps etc.

List of Tools and equipment for Book Binder

Sl.No.	Description of items
1.	Wire stitching machine 1" (2.5 cm)
2.	Screw press (2 different sizes)
3.	Paper cutting machine, size (90 cm.) or three side trimmer
4.	Wooden planks (size 2'1') (60 x 30 x 2.5 cm)
5.	Needle for sewing
6.	Bone knife for folding
7.	Spiral binding machines
8.	Nipping Press
9.	Hand numbering machine
10.	Perforating machine (60 cm), (tradle type)
11.	Punching machine (with a set of punches)
12.	Eyeleting and punching machine
13.	Corner cutting machine (treadle type)
14.	Creasing machine
15.	Board cutter
16.	Paper cutting knives, hand
17.	Scissors
18.	Hammer 250 gm.
19.	Bodkins
20.	Pairing knives (for leather)
21.	Brushes 25 mm., 50 mm., 100 mm. (In equivalent metric sizes) available
22.	Steel rule (60 cm)
23.	Racks for paper
24.	Work table (240 x 120 x 75 cm)

Advanced/Supervisory for Printing Sector (Except Book Binding)

Name : **Advanced/Supervisory – FOR PRINTING SECTOR
(Except Book Binding)**

Sector: **Printing**

Code: **PRI309**

Entry Qualification: Minimum 10th standard and 14 Years of Age. Should have completed the Corresponding advanced module(PRI206/207/208)

Terminal Competency: The person would be able to supervise/work in various departments in the modern printing press independently like:

- i) Desk Top publishing Operating,
- ii) Offset Plate Making,
- iii) Offset Machine Operating,
- iv) Silk Screen Printing

Duration: 120 Hrs.

Space: 5 sq.meter/trainee Power: 5 to 7 KVA

Practical Competencies	Underpinning Knowledge (Theory)
<p>Lubrication system & application of measuring tools</p> <ul style="list-style-type: none"> ✓ Lubricants: practice on lubrication system used in printing machines, kinds and methods. ✓ Practice on various types of measuring gauges like Hygrometer, Brume thermometer, Densitometer, intensity meter, exposure meter etc. 	<ul style="list-style-type: none"> ✓ Lubricants: Lubrication system used in printing machines, kinds and methods ✓ Colour: Masking techniques, additive and subtractive theory
<p>Advanced Computer operating systems, complex imposing & Application of graphic design</p> <ul style="list-style-type: none"> ✓ Handling and operating the Computer, using desk-top bars, start button, menus and help menus. Installation of windows and software etc. ✓ Principle of graphic design and its applications ✓ Practice in complex imposing schemes and its relation to the type of folding methods applicable on different kind of printing work on sheet work and half sheet work, upright, oblong, work and turn, work and tumble, work and twist. Inset & outset sections. ✓ Computerized System Planning 	<ul style="list-style-type: none"> ✓ Paper testing, physical and chemical properties of paper. Blistering & folding strength, GSM, PH value, sizing material, conditioning etc. ✓ Complex imposing scheme and its relation to the type of folding methods applicable on different kind of printing work on sheet work and half sheet work, upright, oblong, work and turn, work and tumble, work and twist. Inset & outset sections ✓ Computerized System Planning Scanning of Line drawing, half tone pix, screen ruling as per paper to be used for printing, direct imposing of pages on computer using prescribed software, imposing scheme for different style of binding.
<p>Setting of electronic & computerized controls on machines and operation troubles</p> <ul style="list-style-type: none"> ✓ Practice and settings of various electronics and computerized devices in advanced machines. ✓ Operating trouble relating to various printing departments: causes and remedies. 	<ul style="list-style-type: none"> ✓ . Miscellaneous work on printing machines: set on wet printing, embossing, bronzing, metal printing, U.V aqua coating, ornamentation, grain direction of paper Printers' science, Temperature and relative humidity: effects on pate and paper. Advantages of air-conditioning

<p>Press Administration – Docketing, record keeping, production planning and quality control.</p> <ul style="list-style-type: none"> ✓ Practice on costing various kinds of jobs using scientific methods based daily docket system ✓ Maintaining all records relating to the press. Filling up and maintenance of various press records ✓ Lay out planning of various departments of print shop. ✓ Project based printing industrial visit 	<ul style="list-style-type: none"> ✓ Lay out planning of various departments of print shop ✓ Costing, estimating and accountancy by using daily docket system etc ✓ Quality controls, Production planning and quality control ✓ Brief descriptions of printers' laws and press administration
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List of Tools and Equipment for Advanced/Supervisory for Printing Sector (Except Book Binding)

Sl.No.	Description of item
1	Computer of latest specification
2	Software: Page Maker and other standard software.
3	Laser printer
4	Plate storage cabinet
5	Lining up table – size Double Demy or equivalent
6	Plate drying cabinet 30x40 cm with 2.5 cm slots.
7	Densitometer
8	Baum meter
9	Intensity meter
10	exposure meter
11	Ink slab 50x50 cm
12	Fire Extinguisher
13	Hydrometer
14	Timer
15	Dry & wet bulb
16	Steel rule, graduated
17	Gloves
18	Scalpel handle with blade No. 3 blade No. 3
19	Densitometry (Ref lection & transmission type)
20	Drafting machine,
21	Magnifying glass (+8)
22	Cupboard steel
23	Ems scale,
24	Set squares (18 inch Size)
25	Tool Kits of standards make
26	Wooden/retouching working table with sunmica top 5,x3, sizes.
27	Hygrometer
	Standard Raw- Material
1	Ink: Different types of ink, cyan. Magenta, yellow, black, white, Drier and reducer
2	Paper: Different types of paper, card sheets
3	Printing Plates: Aluminum, pre-sensitized, Master.
4	Mobile oil, grease, turpentine oil, kerosene oil

Advanced/Supervisory (Book Binding)

Name : Advanced/Supervisory (Book Binding)
 Sector: Printing
 Code: **PRI310**
 Entry Qualification: Minimum 10th standard and 14 Years of Age. Should have completed the Corresponding advanced module(PRI204)

Terminal Competency: The person would be able to supervise/work in various departments in the modern printing press independently in book binding department:

Duration: 120 Hrs.

Space: 5 sq.meter/trainee Power: 5 to 7 KVA

Practical Competencies	Underpinning Knowledge (Theory)
<p>Lubrication system & application of measuring tools</p> <ul style="list-style-type: none"> ✓ Lubricants: practice on lubrication system used in Binding machines, kinds and methods. ✓ Seasoning of boards & Papers etc.. 	<ul style="list-style-type: none"> ✓ Lubricants: Lubrication system used in printing machines, kinds and methods
<p>Advanced Computer operating systems, complex imposing & Application graphic design</p> <ul style="list-style-type: none"> ✓ Handling and operating the Computer, using desk-top bars, start button, menus and help menus. Installation of windows and software etc. ✓ Practice in complex imposing schemes and its relation to the type of folding methods applicable on different kind of printing work on sheet work and half sheet work, upright, oblong, work and turn, work and tumble, work and twist. Inset & outset sections. 	<ul style="list-style-type: none"> ✓ Paper testing, physical and chemical properties of paper. Blistering & folding strength, GSM, ph value, sizing material, conditioning etc. ✓ Complex imposing scheme and its relation to the type of folding methods applicable on different kind of printing work on sheet work and half sheet work, upright, oblong, work and turn, work and tumble, work and twist. Inset & outset sections
<p>Setting of electronic & computerized controls on machines and operation troubles</p> <ul style="list-style-type: none"> ✓ Practice and settings of various electronics and computerized devices in advanced machines. ✓ Operating trouble relating to various Bindery departments: causes and remedies. 	<ul style="list-style-type: none"> ✓ Advanced bindery machines for automatic folding . ✓ Automatic case making machines. ✓ Automatic sewing Machines ✓ Automatic numbering machines. ✓ Lamination and spiral binding machine.
<p>Press Administration – Docketing, record keeping, production planning and quality control.</p> <ul style="list-style-type: none"> ✓ Practice on costing various kinds of jobs using scientific methods based daily docket system ✓ Maintaining all records relating to the press. Filling up and maintenance of various press records ✓ Lay out planning of various departments of bindery shop. ✓ Project based printing industrial visit 	<ul style="list-style-type: none"> ✓ Lay out planning of various departments of print shop ✓ Costing, estimating and accountancy by using daily docket system etc ✓ Quality controls, Production planning and control ✓ Brief descriptions of printers' laws and press administration

Tools and Equipment list in Advanced/Supervisory (Book Binding)

Sl.No.	Description of items
1.	Wire stitching machine 1" (2.5 cm)
2.	Screw press (2 different sizes)
3.	Paper cutting machine, size (90 cm.) or three size trimmer
4.	Wooden planks (size 2'1') (60 x 30 x 2.5 cm)
5.	Needle for sewing
6.	Bone knife for folding
7	Spiral binding machines
8	Nipping Press
9.	Hand numbering machine
10.	Perforating machine (60 cm), (treadle type)
11.	Punching machine (with a set of punches)
12.	Eyeleting and punching machine
13.	Corner cutting machine (treadle type)
14.	Creasing machine
15.	Board cutter
16.	Paper cutting knives, hand
17.	Scissors
18.	Hammer 250 gm.
19.	Bodkins
20.	Pairing knives (for leather)
21	Brushes 25 mm., 50 mm., 100 mm. (In equivalent metric sizes) available
22	Steel rule (60 cm)
23	Racks for paper
24	Work table (240 x 120 x 75 cm)

List of Expert/Trade Committee Members

CURRICULUM DEVELOPMENT FOR SHORT TERM COURSES BASED ON MODULAR EMPLOYABLE SKILLS

SECTOR/AREA: **Printing**

	NAME S/Shri	DESIGNATION	DEPARTMENT
1	2	3	4
1	Ashok Kumar	Dy. DG	DGE&T
2	Dhirender Kumar	Executive Director	Railway Board
3	P Ram	HOD Printing	Pusa Polytechnic
4	NC Majumdar	Joint Director	Publication Divn.
	BL Srinivasa*	Hon en Secretary	All India Federation of Masters Printers
5	AK Ganguli	Joint Director (raining)	DGE&T
6	AK Sinha	General Manager	D'te of Printing
7	Veerender Bharti	Sr. Manager (Printing)	ICMR
8.	Vinod K Meena	Production Manager	DAVP
9	Rajiv Kumar	Dy. Manager-Printing	ITDC
10	Shiv Kumar*	Chief - Production	NCERT
11	AK Solanki*	Assistant Director	DET Delhi
12	DK Jatav	Assistant Director	DGET
13	SS Bhargava	Training Officer	DGET
14	AK Tyagi	V. I.	DGE&T

* Comments through Mail.