PLATE MAKER (LITHOGRAPHIC)

COMPETENCY BASED CURRICULUM

(Duration: 1yr 03 months.)

APPRENTICESHIP TRAINING SCHEME (ATS)

NSQF LEVEL- 4

SECTOR –PRODUCTION & MANUFACTURING

सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

Directorate General of Training

Skill India
कौशल भारत-कुशल भारत

PLATE MAKER (LITHOGRAPHIC)

(Revised in 2018)

APPRENTICESHIP TRAINING SCHEME (ATS)

NSQF LEVEL - 4

Developed By

Ministry of Skill Development and Entrepreneurship
Directorate General of Training
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Special acknowledgement by DGT to the following expert members who have contributed immensely in this curriculum.

Sl. No.	Name & Designation Sh./Mr./Ms.	Organization	Expert Group Designation
1.			
2.			
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CONTENTS

1. BACKGROUND

1.1 Apprenticeship Training Scheme under Apprentice Act 1961

The Apprentices Act, 1961 was enacted with the objective of regulating the programme of training of apprentices in the industry by utilizing the facilities available therein for imparting on-the-job training. The Act makes it obligatory for employers in specified industries to engage apprentices in designated trades to impart Apprenticeship Training on the job in industry to school leavers and person having National Trade Certificate(ITI pass-outs) issued by National Council for Vocational Training (NCVT) to develop skilled manpower for the industry**.** There are four categories of apprentices namely**; trade apprentice, graduate, technician and technician (vocational) apprentices.**

Qualifications and period of apprenticeship training of **trade apprentices** vary from trade to trade. The apprenticeship training for trade apprentices consists of basic training followed by practical training. At the end of the training, the apprentices are required to appear in a trade test conducted by NCVT and those successful in the trade tests are awarded the National Apprenticeship Certificate.

The period of apprenticeship training for graduate (engineers), technician (diploma holders and technician (vocational) apprentices is one year. Certificates are awarded on completion of training by the Department of Education, Ministry of Human Resource Development.

1.2 Changes in Industrial Scenario

Recently we have seen huge changes in the Indian industry. The Indian Industry registered an impressive growth during the last decade and half. The number of industries in India have increased manifold in the last fifteen years especially in services and manufacturing sectors. It has been realized that India would become a prosperous and a modern state by raising skill levels, including by engaging a larger proportion of apprentices, will be critical to success; as will stronger collaboration between industry and the trainees to ensure the supply of skilled workforce and drive development through employment. Various initiatives to build up an adequate infrastructure for rapid industrialization and improve the industrial scenario in India have been taken.

1.3 Reformation

The Apprentices Act, 1961 has been amended and brought into effect from 22nd December, 2014 to make it more responsive to industry and youth. Key amendments are as given below:

- Prescription of number of apprentices to be engaged at establishment level instead of trade-wise.
- Establishment can also engage apprentices in optional trades which are not designated, with the discretion of entry level qualification and syllabus.
- Scope has been extended also to non-engineering occupations.
- Establishments have been permitted to outsource basic training in an institute of their choice.
- The burden of compliance on industry has been reduced significantly.

2. TRAINING SYSTEM

2.1 GENERAL

Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers range of vocational training courses catering to the need of different sectors of economy/ Labour market. The vocational training programmes are delivered under aegis of National Council of Vocational Training (NCVT). Craftsman Training Scheme (CTS) and Apprenticeship Training Scheme (ATS) are two pioneer programmes of NCVT for propagating vocational training.

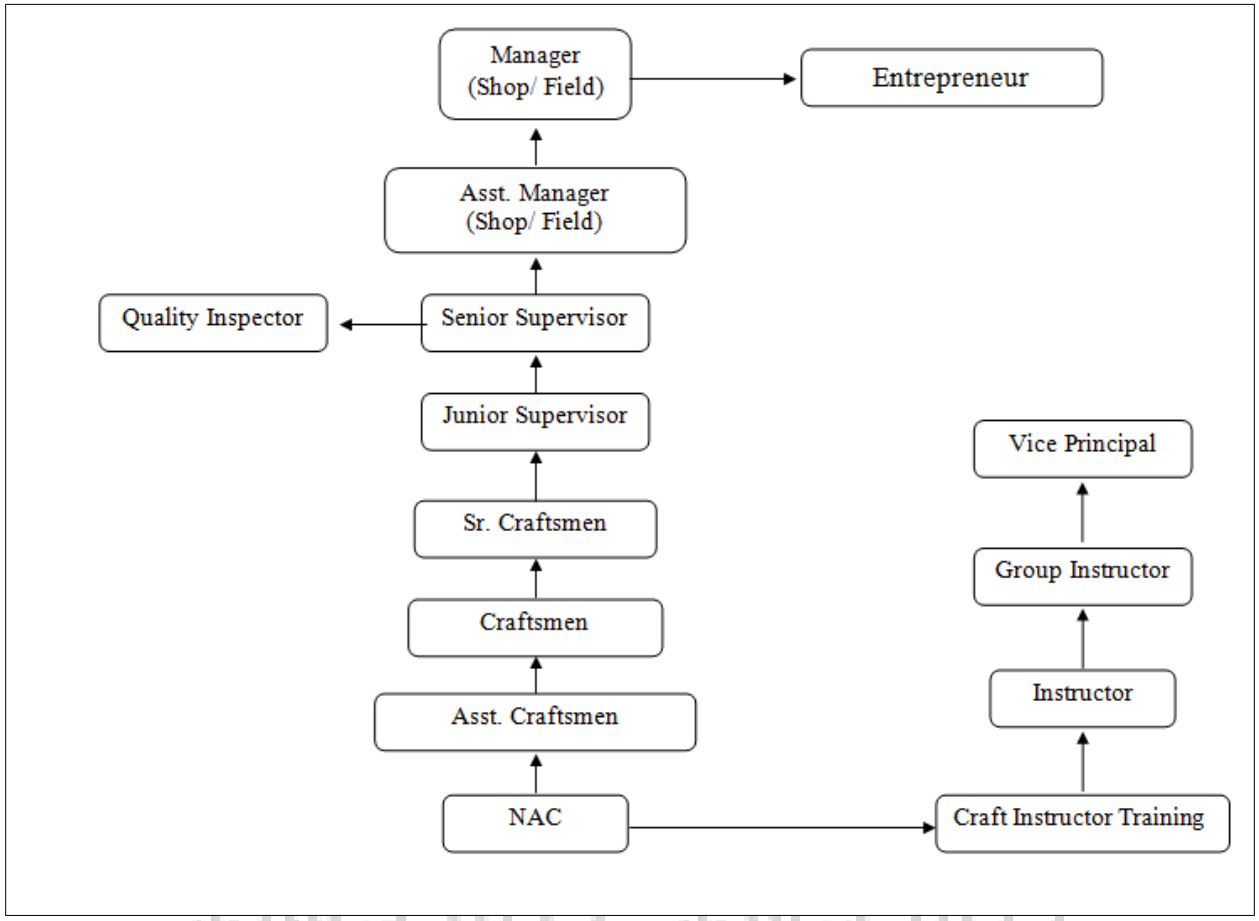
Plate Maker (Lithographic) trade under ATS is one of the most popular courses delivered nationwide through different industries. The course is of one years and three month (01 Block of 15months including basic training) duration. It mainly consists of Domain area and Core area. In the Domain area Trade Theory & Practical impart professional - skills and knowledge, while Core area - and Employability Skills imparts requisite core skills & knowledge and life skills. After passing out the training programme, the trainee is being awarded National Apprenticeship Certificate (NAC) by NCVT having worldwide recognition.

Broadly candidates need to demonstrate that they are able to:

- Read & interpret technical parameters/document, plan and organize work processes, identify necessary materials and tools;
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional skill, knowledge, core skills & employability skills while performing jobs and solve problem during execution.
- Check the different make-up application according to different facial shapes & age.
- Document the technical parameters related to the task undertaken.

2.2 CAREER PROGRESSION PATHWAYS:

- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming instructor in ITIs.
- Indicative pathways for vertical mobility.



2.3 COURSE STRUCTURE:

Table below depicts the distribution of training hours across various course elements during a period of one year (*Basic Training and On-Job Training*):-

Total training duration details: -

Time (in months)	1-3	4 -15
Basic Training	**Block– I**	**-----**
Practical Training (On - job training)	**----**	**Block – I**

A. Basic Training

For 02 yrs. Course (Non-Engg.):- **Total 03 months:** 03 months in 1st yr.only

For 01 yr. Course (Non-Engg):- **Total 03 months:** 03 months in 1st yr.

Sl. No.	Course Element	Total Notional Training Hours (For 01 yr. Course)
1	Professional Skill (Trade Practical)	270
2	Professional Knowledge (Trade Theory)	120
3	Employability Skills	110
	Total (including Internal Assessment)	**500**

B. On-Job Training:-

For 01 yr. Course (Non-Engg.) :-(**Total 12 months**)

Notional Training Hours for On-Job Training: 2080 Hrs.

C. Total training hours:-

Duration	Basic Training	On-Job Training	Total
For 02 yrs. Course (Non-Engg.)	500 hrs.	3640 hrs.	4140 hrs.
For 01 yr. Course (Non-Engg.)	500 hrs.	2080 hrs.	2580 hrs.

2.4 ASSESSMENT & CERTIFICATION:

The trainee will be tested for his skill, knowledge and attitude during the period of course and at the end of the training programme as notified by Govt of India from time to time. The Employability skills will be tested in first two semesters only.

a) The **Internal assessment** during the period of training will be done by **Formative assessment method** by testing for assessment criteria listed against learning outcomes. The training institute have to maintain individual *trainee portfolio* as detailed in assessment guideline. The marks of internal assessment will be as per the template (Annexure – II).

b) The final assessment will be in the form of summative assessment method. The All India Trade Test for awarding NAC will be conducted by NCVT on completion of course as per guideline of Govt of India. The pattern and marking structure is being notified by govt of India from time to time. **The learning outcome and assessment criteria will be basis for setting question papers for final assessment. The examiner during final examination will also check**

individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS REGULATION

The minimum pass percent for Practical is 60% & minimum pass percent for Theory subjects 40%. The candidate pass in each subject conducted under all India trade test.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking assessment. Due consideration should be given while assessing for team work, avoidance/reduction of scrap/wastage and disposal of scarp/wastage as per procedure, behavioral attitude, sensitivity to environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work

Evidences of internal assessments are to be preserved until forthcoming semester examination for audit and verification by examination body. The following marking pattern to be adopted while assessing:

Performance Level	Evidence
(a) Weightage in the range of 60 -75% to be allotted during assessment	
For performance in this grade, the candidate with occasional guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of an acceptable standard of craftsmanship.	• Demonstration of good skill in the use of hand tools, machine tools and workshop equipment • Below 70% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards. • A fairly good level of neatness and

	consistency in the finish • Occasional support in completing the project/job.
(b)Weightage in the range of above75% - 90% to be allotted during assessment	
For this grade, the candidate, with little guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of a reasonable standard of craftsmanship.	• Good skill levels in the use of hand tools, machine tools and workshop equipment • 70-80% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards. • A good level of neatness and consistency in the finish • Little support in completing the project/job
(c) Weightage in the range of above 90% to be allotted during assessment	
For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.	• High skill levels in the use of hand tools, machine tools and workshop equipment • Above 80% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards. • A high level of neatness and consistency in the finish. • Minimal or no support in completing the project.

3. JOB ROLE

Brief description of Job roles:

Plate Maker (Lithography)

Lithographic Artist exposes sensitized metal plate to positive or negative film, using vacuum frame, to produce offset lithographic printing plates. Increases or reduces size of photographic dots by chemical or photomechanical methods on halftone negatives or positives to be used in preparation of lithographic printing plates. Punches holes in light-sensitive plate with register punch and insert register pins in holes to prepare plate for contact with positive or negative film. Places plate on bed of vacuum frame and inserts positives or negatives on register pins to align positives or negatives with each other. Places masking paper on areas of plate not covered by positives or negatives to prevent exposure of those areas. Examines film on light table to determine specified colour and colour balance, using magnifying glass or densitometer. Compares proof print of colour separation negative or positive with customer's original sample or copy and standard colour chart to determine accuracy of reproduction. Identifies and marks colour discrepancies on print and film. Prepares dyes or other chemical solutions according to standard formulas and applies solution to produce colour effect by chemical method. Blocks out or modifies colour shades of film, using template, brushes, and opaque. Places masks over separation negatives or positives and exposes film for specified time, using contact frame and automatic film processors to reduce size of photographic dots to increase or reduce colour. Applies opaque to block out blemishes and pinholes.

Transferor, Photo Mechanical; Photoengraving Printer; Proof-plate Maker; Helio Operator; Vandyke Printer transfers impression from photograph negatives to metal plates for subsequent processing or for direct use in lithographic printing. Measures negative for cutting plates (zinc or copper) to size, sensitizes plate by pouring solutions, places plate and negative in contact frame, exposes plate to light, develops it with photo-developing chemicals and dries it.

Reference NCO Code 2015: - 7321.0800, 7321.1300

4. NSQF LEVEL COMPLIANCE

NSQF level for Plate Maker (Lithographic) trade under ATS: **Level 4**

As per notification issued by Govt. of India dated- 27.12.2013 on National Skill Qualification Framework total 10 (Ten) Levels are defined.

Each level of the NSQF is associated with a set of descriptors made up of five outcome statements, which describe in general terms, the minimum knowledge, skills and attributes that a learner needs to acquire in order to be certified for that level.

Each level of the NSQF is described by a statement of learning outcomes in five domains, known as level descriptors. These five domains are:

a. Process
b. Professional knowledge,
c. Professional skill,
d. Core skill and
e. Responsibility.

The Broad Learning outcome of Plate Maker (Lithographic) trade under ATS mostly matches with the Level descriptor at Level- 4.

The NSQF level-4 descriptor is given below:

Level	Process Required	Professional Knowledge	Professional Skill	Core Skill	Responsibility
Level 4	Work in familiar, predictable, routine, situation of clear choice.	Factual knowledge of field of knowledge or study	Recall and demonstrate practical skill, routine and repetitive in narrow range of application, using appropriate rule and tool, using quality concepts	Language to communicate written or oral, with required clarity, skill to basic Arithmetic and algebraic principles, basic understanding of social political and natural environment.	Responsibility for own work and learning.

5. GENERAL INFORMATION

Name of the Trade	**Plate Maker (Lithographic)**
NCO - 2015	7321.0800, 7321.1300
NSQF Level	Level – 4
Duration of Apprenticeship Training (Basic Training + On-Job Training)	3 months+ One year (01 Block of 15 months duration including basic training).
Duration of Basic Training	a) Block –I : 3 months **Total duration of Basic Training: 3 months**
Duration of On-Job Training	a) Block–I: 12 months **Total duration of Practical Training: 12 months**
Entry Qualification	Passed 10th class examination or its equivalent
Selection of Apprenticeship	The apprentices will be selected as per Apprenticeship Act amended time to time.
Instructors Qualification for Basic Training	As per ITI instructors qualifications as amended time to time for the specific trade.
Infrastructure for basic training	As per related trade of ITI.
Examination	The internal examination/ assessment will be held on completion of each block. Final examination for all subjects will be held at the end of course and same will be conducted by NCVT.
Rebate to Ex-ITI Trainees	03 months
CTS trades eligible for Plate Maker (Lithographic) (Apprenticeship)	Plate Maker (Lithographic)

Note:

- *Industry may impart training as per above time schedule for different block, however this is not fixed. The industry may adjust the duration of training considering the fact that all the components under the syllabus must be covered. However the flexibility should be given keeping in view that no safety aspects is compromised.*
- *For imparting Basic Training the industry to tie-up with ITIs having such specific trade and affiliated to NCVT.*

6. LEARNING OUTCOME

6.1 GENERIC LEARNING OUTCOME

The following are minimum broad Common Occupational Skills/ Generic Learning Outcome after completion of the Cutting and Sewing Machine Operator course of 01 year duration under ATS.

Block I:-

1. Recognize & comply safe working practices, environment regulation and housekeeping.
2. Select and ascertain measuring instrument and measure dimension of components and record data.
3. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.
4. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.
5. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.
6. Plan and organize the work related to the occupation.

6.2 SPECIFIC LEARNING OUTCOME

Block – I

1. Handling and care, cleaning, lubrication of equipment for lithographic plate making, retouching and litho-offset printing, dress, correct working posture and general maintenance of machinery and equipment. Key drawing – preparation.
2. Printing surfaces – litho-stone, metals – zinc aluminium and copper, their care, handling and use. Retouching techniques, halftone negative, continuous tone negatives, screened negatives and positives, monochrome and colour work.
3. Lining – up table, layout sheets – preparation and use. Tone and colour correction, strengthening/reducing of continuous tone/halftone images, retouching on continuous tone/screen negatives and detectching on screen positives, spotting, masking, staging.
4. Tints and mediums – application. Solutions charts – use, densitometer – reflection and transmission – reading. Colour chart – use, densitometer – reflection and transmission – readings.
5. Planning, stripping and assembly to a layout, imposition, blue-sky, use, punch and pin register method. Colour separation of line and halftone jobs, line colour separation from a master negative. Measuring gauges – Hydrometer, boume thermo-meter, densitometer etc, handling care and use.

6. Plates for surface and deep – etch processes – kinds, their care, handling and use, pre-sensitised plates. Solutions for plate – making – surface and deep – etch plated – materials used, preparations and handling.
7. Graining of metal plates – equipment and materials their use, plate graining machine – handling and care. Plate-making – Equipment and materials, whirler, printing – down-frame etc. their use, principles of plate making.
8. Exposure, image formation – treatment and control. Proofing press – Handling and care, proofing, nap roller – preparation and treatment.
9. Offset printing machine – Handling and care, preparation for printing – fixing the plate, lays delivery, inking and dampening systems, automatic feeders, setting and adjustment, printing – line and halftone work, single colour.
10. Outline of running problems due to defective plates causes and remedies. Lining-up table and other make-ready equipments register marks – stew edges, their handling and use.
11. Films, negatives and positives, patching up for colour work-handling and use. Plates – different types used for surface and deep-etch plate making, multi-metal plates, handling and use.
12. Graining of plates – equipment and materials used quality of grain-control, handling and storage of grained plates, washing of old plates for regraining.
13. Plate-making – surface and deep-etch, materials commonly used – coating solutions, etches, counter etches, solvents gun liquor, wash-out solutions, powders, etc. their preparation, handling, care and use.
14. Multi-image registration – use of blue line keys and other methods. Light sources – kinds – exposure, image formation treatment and control, corrections – deletions, and additions.
15. Duplication of images – step and repeat machines, kinds, manual and automatic, handling, care and use.

Note: *Learning outcomes are reflection of total competencies of a trainee and assessment will be carried out as per assessment criteria.*

7. LEARNING OUTCOME WITH ASSESSMENT CRITERIA

GENERIC LEARNING OUTCOME	
LEARNING OUTCOMES	**ASSESSMENT CRITERIA**
1. Recognize & comply safe working practices, environment regulation and housekeeping.	1. 1. Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements.
	1. 2. Recognize and report all unsafe situations according to site policy.
	1. 3. Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.
	1. 4. Identify, handle and store / dispose off dangerous/unsalvageable goods and substances according to site policy and procedures following safety regulations and requirements.
	1. 5. Identify and observe site policies and procedures in regard to illness or accident.
	1. 6. Identify safety alarms accurately.
	1. 7. Report supervisor/ Competent of authority in the event of accident or sickness of any staff and record accident details correctly according to site accident/injury procedures.
	1. 8. Identify and observe site evacuation procedures according to site policy.
	1. 9. Identify Personal Productive Equipment (PPE) and use the same as per related working environment.
	1. 10. Identify basic first aid and use them under different circumstances.
	1. 11. Identify different fire extinguisher and use the same as per requirement.
	1. 12. Identify environmental pollution & contribute to avoidance of same.
	1. 13. Take opportunities to use energy and materials in an environmentally friendly manner
	1. 14. Avoid waste and dispose waste as per procedure
	1. 15. Recognize different components of 5S and apply the same in the working environment.
2. Select and ascertain measuring instrument and measure dimension of components and record	2.1 Select appropriate measuring instruments such as micrometers, verniercalipers, dial gauge, bevel protector and height gauge (as per tool list).
	2.2 Ascertain the functionality & correctness of the

data.	instrument.
	2.3 Measure dimension of the components & record data to analyse the with given drawing/measurement.
3. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.	3.1 Explain the concept of productivity and quality tools and apply during execution of job.
	3.2 Understand the basic concept of labour welfare legislation and adhere to responsibilities and remain sensitive towards such laws.
	3.3 Knows benefits guaranteed under various acts
4. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	4.1 Explain the concept of energy conservation, global warming, pollution and utilize the available recourses optimally & remain sensitive to avoid environment pollution.
	4.2 Dispose waste following standard procedure.
5. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	5. 1. Explain personnel finance and entrepreneurship.
	5. 2. Explain role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
	5. 3. Prepare Project report to become an entrepreneur for submission to financial institutions.
6. Plan and organize the work related to the occupation.	6. 1. Use documents, drawings and recognize hazards in the work site.
	6. 2. Plan workplace/ assembly location with due consideration to operational stipulation
	6. 3. Communicate effectively with others and plan project tasks
	6. 4. Assign roles and responsibilities of the co-trainees for execution of the task effectively and monitor the same.
SPECIFIC OUTCOME	
Block-I	
*Assessment Criteria i.e. the standard of performance, for each specific learning outcome mentioned under **Block – I**(section: 10) must ensure that the trainee works in familiar, predictable, routine, situation of clear choice. Assessment criteria should broadly cover the aspect of **Planning** (Identify, ascertain, etc.); **Execution** apply factual knowledge of field of knowledge, recall and demonstrate practical skill during performing the work in routine and repetitive in narrow range of application, using appropriate rule and tool, complying with*	

basic arithmetic and algebraic principles and language to communicate in written or oral with required clarity; ***Checking/ Testing*** *to ensure functionality during the assessment of each outcome. The assessments parameters must also ascertain that the candidate is responsible for his/her own work and learning.*

8. SYLLABUS

BASIC TRAINING (Block – I)

Duration: (03) Three Months

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
1.	Handling and care, Cleaning, lubrication of equipment for lithographic plate making, retouching and litho-offset printing, dress, correct working posture and general maintenance of machinery and equipment. Key drawing – preparation.	Equipment and materials used in retouching work retouching desk, illuminating – lighting and viewing , factors affecting colour judgment. Brief history of printing, comparative analysis of different printing processes. Printing surface – outline of preparation for all processes.
2	Printing surfaces – litho-stone, metals – zinc aluminum and copper, their care, handling and use. Retouching techniques, halftone negative, continuous tone negatives, screened negatives and positives, monochrome and colour work.	Originals for graphic reproduction – photographic prints, Artist's work, transparencies, monochrome coloured – suitability for reproduction. Lithographic plates and printing machinery – outline of history and development. Photomechanical process, classification, equipment & materials used for plate – making offset printing.
3	Lining – up table, layout sheets – preparation and use. Tone and colour correction, strengthening/reducing of continuous tone/halftone images, retouching on continuous tone/screen negatives and detectching on screen positives, spotting, masking, staging.	Photographic materials – films, pre-screened, auto positive, plates, paper, emulsion speed, colour sensitivity, safe lights. Sensitometry and densitometry, densitometer – readings, density range, control. Key drawing and scribing techniques – preparation and use. Plates – metals used – aluminium, zinc and copper, properties, their handling, care and use, pre-sensitised plates. Lining-up table, layout sheets – handling and use.
4	Tints and mediums – application. Solutions charts – use, densitometer – reflection and transmission – reading. Colour chart – use, densitometer – reflection and transmission – readings,	Colour – principles of colour, additive and substractive theories, colour separation – filters, filter factor, sequences of colour printing, colour masking, use of different masking

		techniques, colour guides, colour standardisation and measurement their use. Brief history of printing, comparative analysis of different printing processes. Printing surface – outline of preparation for all processes. Plate graining – equipment and materials used – quality of the grain. Plate making – surface and deep-etch plates, outline of chemicals and solutions used for plate making, coating of plate for light sensitivity – use of whirled.
5	Planning, stripping and assembly to a layout, imposition, blue-sky, use, punch and pin register method. Colour separation of line and halftone jobs, line colour separation from a master negative. Measuring gauges – Hydrometer, boume thermo-meter, densitometer etc, handling care and use.	Making line, colour separation from a master negative. Ste-wedges, register marks. Colour guides, their use. Don't formations with glass line screens and contact screens, comparative analysis, colour correction by formation for different plate making processes, corrections for wet-on-wet printing. Light source – kinds, exposure – printing – down – frame use. Measuring gauges, hydrometer, hygrometer, densitometer etc., their handling, care and use. Proof and transfer presses – kinds, mechanical and operational features, hand transferring of images.
6	Plates for surface and deep – etch processes – kings, their care, handling and use, pre-sensitised plates. Solutions for plate – making – surface and deep – etch plated – materials used, preparations and handling.	Defects in negatives and positives – Causes and remedies spotting, staging, line and tone combination work. Layout, assembly, tint laying, stripping, registering colour work, blue-key and pin and register methods, colour proofing. Printing machines for litho-offset printing – kinds, mechanical and operational features inking & dampening systems. Simple imposing schemes with relation to folding schemes. Rollers – kinds, setting, cleaning,

		handling & storage, nap roller – preparation and treatment
7	Graining of metal plates – equipment and materials their use, plate graining machine – handling and care. Plate-making – Equipment and materials, whirler, printing – down-frame etc. their use, principles of plate making.	Modern developments – Electronic devices for colour separation and screening methods, colour corrections of negatives and positives produced by electronic method. Films, negatives and positives – qualities required for making good plates. Plate for surface and deep-etch processes, multi-metal plates, anodized plates, pre-sensitised plates – their properties preparation comparative analysis and use. Chemicals, colloids and salts used for plate making their reactions on metal plates – preparation of solutions – handling, care and storage.
8	Exposure, image formation – treatment and control. Proofing press – Handling and care, proofing, naproller – preparation and treatment.	Masking and scanning in comparison relation to retouching. Graining of plates – quality of grain, governing factors for selection, equipment and materials used for graining – factors controlling the quality of grain, washing of old plates. Light sources, kinds, comparative study, intensity of light handling, care and control, exposure-factors governing the time of exposure and intensity of light.
9	Offset printing machine – Handling and care, preparation for printing – fixing the plate, lays delivery, inking and dampening systems, automatic feeders, setting and adjustment, printing – line and halftone work, single colour.	Calculations – consumption of materials used for retouching work – output. Plate making – coating of plates, chemicals and solutions used, speed of rotation, effects of variation in coating, printing-down, register marks, step-wedges, their purpose, corrections – additions and deletions-chemicals and tools used, defects in plate, causes and remedies handling, care and storage of plates, quality control. Halftone – theory of halftone, dot formation, control of size of dots, screens – kinds and use.
10	Outline of running problems due to	Daily routine – docket and output

	defective plates causes and remedies. Lining-up table and other make-ready equipments, register marks – stewedges, their handling and use. Films, negatives and positives, patching up for colour work-handling and use.Plates – different types used for surface and deep-etch plate making, multi-metal plates, handling and use.	records, maintenance. Colour – principles of colour, additive and subtractive theories, colour, separation, used of filters. Imposing schemes - general and with relation to folding machines – simple and complex schemes up to 32 pages. Duplication of images by mechanical means – step and repeat machine, kinds, manual and automatic.
11	Graining of plates – equipment and materials used quality of grain-control, handling and storage of grained plates, washing of old plates for regraining. Plate-making – surface and deep-etch, materials commonly used – coating solutions, etches, counter etches, solvents gun liquor, wash-out solutions, powders, etc. their preparation, handling, care and use.	Planning and arrangement of a retouching section. PE value – effects on plate making-process-treatment and control. Temperature and d relative humidity – effects on plates-control, air conditioning – advantages. Modern developments in plate making – electronic devices for plate-making. Calculations – consumption of chemicals and other materials output etc.
12	Multi-image registration – use of blue line keys and other methods. Light sources – kinds – exposure, image formation treatment and control, corrections – deletions, and additions. Duplication of images – step and repeat machines, kinds, manual and automatic, handling, care and use.	General care and maintenance of equipment and other materials used in retouching section. Daily routine – docket and output records, maintenance. Planning and arrangement of a plate-making section. General care and maintenance of machinery, equipment and other materials of a plate-section. Safety – Hazards, preventive methods.
13	**Internal Assessment 03days**	

Note: - *More emphasis to be given on video/real-life pictures during theoretical classes. Some real-life pictures/videos of related industry operations may be shown to the trainees to give a feel of Industry and their future assignment.*

9. SYLLABUS - CORE SKILLS

9.1 EMPLOYABILITY SKILLS

(DURATION: - 110 HRS.)

Block – I (Duration – 110 hrs.)	
1. English Literacy Duration : 20 Hrs.	Marks : 09
Pronunciation	Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)
Functional Grammar	Transformation of sentences, Voice change, Change of tense, Spellings.
Reading	Reading and understanding simple sentences about self, work and environment
Writing	Construction of simple sentences Writing simple English
Speaking / Spoken English	Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to previous communication.
2. I.T. Literacy Duration : 20 Hrs.	Marks : 09
Basics of Computer	Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.
Computer Operating System	Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc, Use of Common applications.
Word processing and Worksheet	Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets.
Computer	Basic of computer Networks (using real life examples), Definitions of

Networking and Internet	Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of Internet (Network of Networks), Meaning of World Wide Web (WWW), Web Browser, Web Site, Web page and Search Engines. Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and use of email. Social media sites and its implication. Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT - ACT, types of cyber crimes.
3. Communication Skills Duration : 15 Hrs. Marks : 07	
Introduction to Communication Skills	Communication and its importance Principles of Effective communication Types of communication - verbal, non verbal, written, email, talking on phone. Non verbal communication -characteristics, components-Para-language Body language Barriers to communication and dealing with barriers. Handling nervousness/ discomfort.
Listening Skills	Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening. Triple- A Listening - Attitude, Attention & Adjustment. Active Listening Skills.
Motivational Training	Characteristics Essential to Achieving Success. The Power of Positive Attitude. Self awareness Importance of Commitment Ethics and Values Ways to Motivate Oneself Personal Goal setting and Employability Planning.
Facing Interviews	Manners, Etiquettes, Dress code for an interview Do's & Don'ts for an interview.
Behavioral Skills	Problem Solving Confidence Building Attitude
4. Entrepreneurship Skills Duration: 15 Hrs. Marks : 06	
Concept of Entrepreneurship	Entrepreneur - Entrepreneurship - Enterprises:-Conceptual issue Entrepreneurship vs. management, Entrepreneurial motivation. Performance & Record, Role & Function of entrepreneurs in relation to the enterprise & relation to the economy, Source of business ideas, Entrepreneurial opportunities, The process of setting up a business.
Project Preparation	Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept &

& Marketing analysis	application of PLC, Sales & distribution Management. Different Between Small Scale & Large Scale Business, Market Survey, Method of marketing, Publicity and advertisement, Marketing Mix.
Institutions Support	Preparation of Project. Role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes& procedure & the available scheme.
Investment Procurement	Project formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment procedure - Loan procurement - Banking Processes.
5. Productivity Duration: 10 Hrs. Marks : 05	
Benefits	Personal / Workman - Incentive, Production linked Bonus, Improvement in living standard.
Affecting Factors	Skills, Working Aids, Automation, Environment, Motivation - How improves or slows down.
Comparison with developed countries	Comparative productivity in developed countries (viz. Germany, Japan and Australia) in selected industries e.g. Manufacturing, Steel, Mining, Construction etc. Living standards of those countries, wages.
Personal Finance Management	Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.
6. Occupational Safety, Health and Environment Education Duration: 15 Hrs. Marks : 06	
Safety & Health	Introduction to Occupational Safety and Health importance of safety and health at workplace.
Occupational Hazards	Basic Hazards, Chemical Hazards, Vibroacoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.
Accident & safety	Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.
First Aid	Care of injured & Sick at the workplaces, First-Aid & Transportation of sick person.
Basic Provisions	Idea of basic provision legislation of India. safety, health, welfare under legislative of India.

Ecosystem	Introduction to Environment. Relationship between Society and Environment, Ecosystem and Factors causing imbalance.
Pollution	Pollution and pollutants including liquid, gaseous, solid and hazardous waste.
Energy Conservation	Conservation of Energy, re-use and recycle.
Global warming	Global warming, climate change and Ozone layer depletion.
Ground Water	Hydrological cycle, ground and surface water, Conservation and Harvesting of water.
Environment	Right attitude towards environment, Maintenance of in -house environment.
7. Labour Welfare Legislation Duration: 05 Hrs. Marks : 03	
Welfare Acts	Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workmen's compensation Act.
8. Quality Tools Duration: 10 Hrs. Marks : 05	
Quality Consciousness	Meaning of quality, Quality characteristic.
Quality Circles	Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles.
Quality Management System	Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.
House Keeping	Purpose of House-keeping, Practice of good Housekeeping.
Quality Tools	Basic quality tools with a few examples.

10. DETAILS OF COMPETENCIES (ON-JOBTRAINING)

The **competencies/ specific outcomes** on completion of On-Job Training are detailed below: -

Block – I

1. Handling and care, cleaning, lubrication of equipment for lithographic plate making, retouching and litho-offset printing, dress, correct working posture and general maintenance of machinery and equipment. Key drawing – preparation.
2. Printing surfaces – litho-stone, metals – zinc aluminium and copper, their care, handling and use. Retouching techniques, halftone negative, continuous tone negatives, screened negatives and positives, monochrome and colour work.
3. Lining – up table, layout sheets – preparation and use. Tone and colour correction, strengthening/reducing of continuous tone/halftone images, retouching on continuous tone/screen negatives and detectching on screen positives, spotting, masking, staging.
4. Tints and mediums – application. Solutions charts – use, densitometer – reflection and transmission – reading. Colour chart – use, densitometer – reflection and transmission – readings.
5. Planning, stripping and assembly to a layout, imposition, blue-sky, use, punch and pin register method. Colour separation of line and halftone jobs, line colour separation from a master negative. Measuring gauges – Hydrometer, boume thermo-meter, densitometer etc, handling care and use.
6. Plates for surface and deep – etch processes – kings, their care, handling and use, pre-sensitised plates. Solutions for plate – making – surface and deep – etch plated – materials used, preparations and handling.
7. Graining of metal plates – equipment and materials their use, plate graining machine – handling and care. Plate-making – Equipment and materials, whirler, printing – down-frame etc. their use, principles of plate making.
8. Exposure, image formation – treatment and control. Proofing press – Handling and care, proofing, naproller – preparation and treatment.
9. Offset printing machine – Handling and care, preparation for printing – fixing the plate, lays delivery, inking and dampening systems, automatic feeders, setting and adjustment, printing – line and halftone work, single colour.
10. Outline of running problems due to defective plates causes and remedies. Lining-up table and other make-ready equipments, register marks – stew edges, their handling and use.

11. Films, negatives and positives, patching up for colour work-handling and use. Plates – different types used for surface and deep-etch plate making, multi-metal plates, handling and use.
12. Graining of plates – equipment and materials used quality of grain-control, handling and storage of grained plates, washing of old plates for regraining.
13. Plate-making – surface and deep-etch, materials commonly used – coating solutions, etches, counter etches, solvents gun liquor, wash-out solutions, powders, etc. their preparation, handling, care and use.
14. Multi-image registration – use of blue line keys and other methods. Light sources – kinds – exposure, image formation treatment and control, corrections – deletions, and additions.
15. Duplication of images – step and repeat machines, kinds, manual and automatic, handling, care and use.

Note:

1. Industry must ensure that above mentioned competencies are achieved by the trainees during their on job training.
2. In addition to above competencies/ outcomes industry may impart additional training relevant to the specific industry.

ANNEXURE – I

INFRASTRUCTURE FOR PROFESSIONAL SKILL & PROFESSIONAL KNOWLEDGE

PLATE MAKER (Lithographic)			
LIST OF TOOLS AND EQUIPMENT for Basic Training (For 20 Apprentices)			
A. TRAINEES TOOL KIT (For each additional unit trainees tool kit Sl. 1-18 is required additionally)			
Sl. No.	**Name of the items**	**Specifications**	**Quantity (indicative)**
1.	Hand transfer press	size: Demy for equivalent.	1 No.
2.	Offset proofing press – capable of producing proofs to register	size: Double Demy or equivalent, with all accessories.	1 No.
3.	Single colour offset printing machine with automatic feeder and accessories	size – Double Demy or equivalent.	1 No.
4.	Lining up table	size: Double Demy or equivalent.	1 No.
5.	Lining stone –	size. Demy or equivalent.	1 No.
6.	Vacuum printing-down frame, with arc lamp	size: Double Demy or equivalent.	1 No.
7.	Whirler machine.	Size: Double Demy or equivalent.	1 No.
8.	Plate graining machine	size: Double Demy or equivalent.	1 No.
9.	Glass jar/container (For keeping/ mixing solution).		4 Nos.
10.	Measuring glasses – different sizes-graduated.		6 Nos.
11.	Enamel/glass funnel		6 Nos.
12.	Hydrometer (Heavier than water).		2 Nos.
13.	Timer.		1 Nos.
14.	P.V.C. sinks with stand.	90 cm x 750 cm x 20 cm	1 Nos.
15.	Thermometer, boume.		1Nos.
16.	Steel graduated.		4 Nos.
17.	Gloves.		2 Pairs.
18.	Scraper steel.		4 Nos.
19.	Pun ice stone.		1 Nos.
20.	Densitometer (Reflection & transmission type).		1 Nos.
21.	Porcelain bowls.		2 Nos.
22.	Magnifying glass	x 8	4 Nos.
Furniture Required			
23.	White Board	size: 8ft. x 4ft.	01

Plate Maker (Lithographic)

24.	Trainer's Table		01
25.	Trainer's Chair		01
26.	Cupboard steel.		1 Nos.

Note: In case of basic training setup by the industry the tools, equipment and machinery available in the industry may also be used for imparting basic training.

Plate Maker (Lithographic)

TOOLS &EQUIPMENTS FOR EMPLOYABILITY SKILLS		
Sl. No.	**Name of the items**	**Quantity**
1.	Computer (PC) with latest configurations and Internet connection with standard operating system and standard word processor and worksheet software	10 Nos.
2.	UPS - 500VA	10 Nos.
3.	Scanner cum Printer	1 No.
4.	Computer Tables	10 Nos.
5.	Computer Chairs	20 Nos.
6.	LCD Projector	1 No.
7.	White Board 1200mm x 900mm	1 No.
Note: - Above Tools &Equipments not required, if Computer LAB is available in the institute.		

ANNEXURE-II

FORMAT FOR INTERNAL ASSESSMENT

Name & Address of the Assessor :			**Year of Enrollment :**
Name & Address of ITI (Govt./Pvt.) :			**Date of Assessment :**
Name & Address of the Industry :			**Assessment location: Industry / ITI**
Trade Name :	**Semester:**		**Duration of the Trade/course:**
Learning Outcome:			

Sl. No	**Maximum Marks (Total 100 Marks)**		**15** Safety consciousness	**5** Workplace hygiene	**10** Attendance/ Punctuality	**5** Ability to follow Manuals/ Written instructions	**10** Application of Knowledge	**10** Skills to handle tools & equipment	**5** Economical use of materials	**10** Speed in doing work	**15** Quality in workmanship	**15** VIVA	**Total internal assessment Marks**	**Result (Y/N)**
	Candidate Name	**Father's/Mother's Name**												
1														
2														